PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 190

Ch.120168-D

Emerson Models 716F, 717F, 719F and 727D (Ch. 120168-D) were added with Production Change Bulletin 61, Set 195-1. Models 741D, 751D (Ch. 120168-D) and production changes thru triangle F were added with Production Change Bulletin 71, Set 211-1. Refer to Production Change Bulletin 61 for the differences between Ch. 120168-D and Ch. 120163-D and refer to Production Change Bulletin 71 for changes made in later production.

Models 757J, 760J

Models 757J and 760J (Ch. 120168-D) have now been added to this list. These models are identical to the models listed above, except, for cabinet items shown below.

Models 757F, 760F (Ch. 120194-D)

Models 757F and 760F (Ch. 120194-D) have also been added. This chassis electrically identical to chassis 120168-D. The only differences being the cabinet items and the physical location of the tubes in the chassis. A tube placement chart is given below which shows the new location of the tubes.

PART NAME	PART NO.	NOTES
Cabinet	140554	Models 757F, J (Mahogany)
Cabinet	140554A	Models 757F, J (Blonde)
Cabinet	140534	Models 760F, J (Mahogany)
Cabinet	140534A	Models 760F, J (Blonde)
Mask	460476	
Safety Glass	520181	Models 757F, J
Safety Glass	520159	Models 760F, J
Control Door	460252	Gold
Control Door	460252A	Maroon
Control Door	460252B	Mottled Ivory
Back	560334	
Knob	450138	Contrast
Knob	450137	Fine Tuning
Knob	450134	Shank, On/Off/Volume
Knob	450262	Flange, On/Off/Volume
Knob	450133	Shank, Channel Selector
Knob	450261	Flange, Channel Selector
Washer	275047	Knob Spring
Spring	587012	Knob
Spring	587011	Knob (1/4" Shaft)

EMERSON MODELS 757F (Ch. 120194-D), 757J (Ch. 120168-D), 760F (Ch. 120194-D), 760J (Ch. 120168-D)

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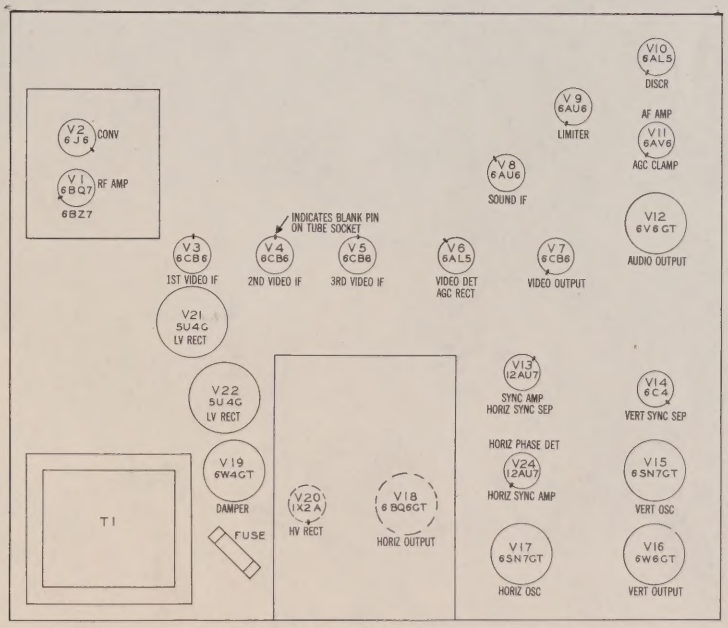
PRODUCTION CHANGES
BULLETIN 86

PRODUCTION CHANGES
BULLETIN 86



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ALLSTATE
MODEL 6295-6 (Ch. 528.6295-6)

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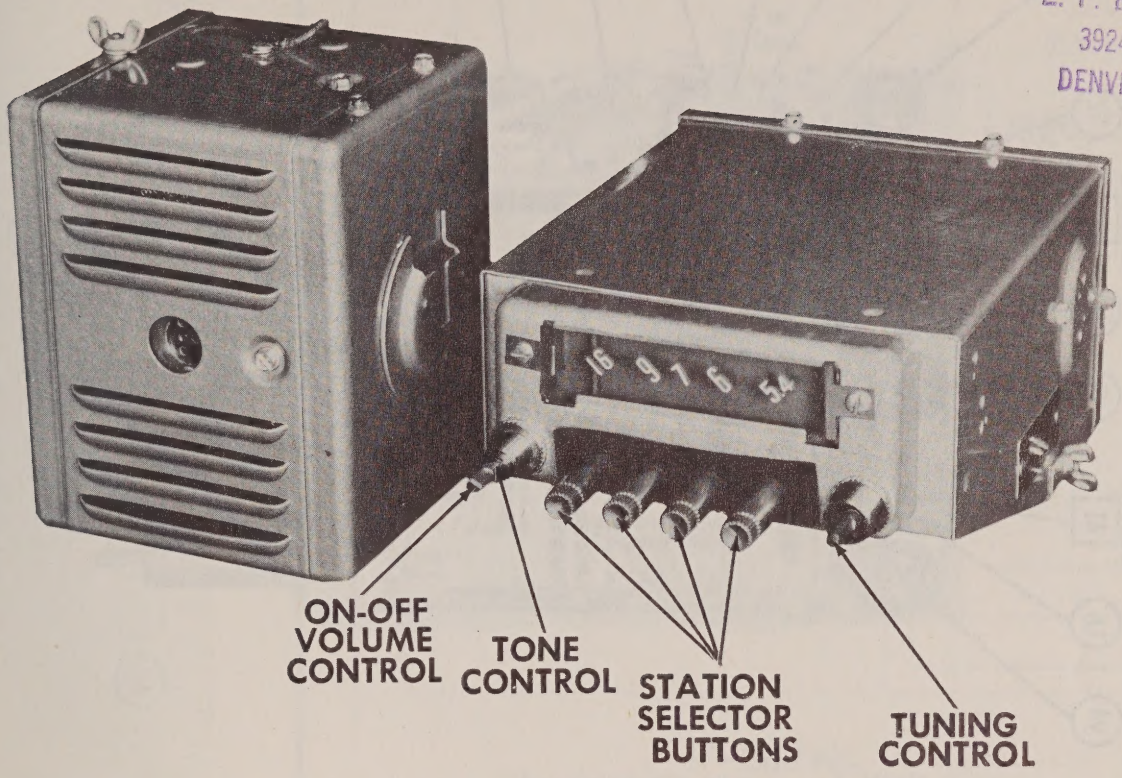
3924 MEADE ST.
DENVER, COLORADO

ALLSTATE
MODEL 6295-6 (Ch. 528.6295-6)



ALLSTATE
MODEL 6295-6 (Ch. 528.6295-6)

TRADE NAME	Allstate Model 6295-6 (Ch. 528.6295-6)
SUPPLIER	Sears Roebuck & Co., 925 S. Homan, Chicago, Ill.
TYPE SET	Battery Operated Automobile Superheterodyne Receiver for Custom or Universal Installations
TUBES (Six)	Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AV6 Det.-AVC-AF Amp., 6V6GT Audio Output, 6X5GT Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 4.6 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	262KC (400%Mod)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum deflection.
2.	75MMF	High side to antenna receptacle. Low side to chassis.	1610KC	"	"	A5	Connect 30MMF capacitor across antenna input. Adjust for maximum deflection.
3.	"	"	1400KC	Tune to 1400KC signal	"	A6, A7	"
4.	Repeat steps 2 and 3. Remove 30MMF capacitor across antenna input terminals.						
5.	With radio installed in car and antenna fully extended, tune to a point between 1400 and 1500KC where no station is heard and adjust A7 to give maximum hiss or noise.						
	To set the push buttons, tune manually to desired station and press push button all the way in. Turn push button to right, or left, until desired station is tuned in. Repeat above procedure for remaining push buttons.						

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		ALLSTATE PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det-AVC-AF Amp.	6AV6	6AV6	7BT	
V5	Audio Output	6V6GT	6V6GT	7S	
V6	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ALLSTATE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲35	400	A18-300	AFH3-131		C102		FP346	TVL-3741	
B	■25	350								
C	▲20	25								
C2	.05	200	A16-197	P288-05	DF-503	PTE4S5		PT415	2TM-S5	
C3	100	500	A15-188	1468-0001	D6-101	5W5T1	GP1K-101	MC-235	1FM-31	
C4	10000		A15-211	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C5	5000		A16-177	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C6	.05	400	A16-189	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C7	.05	400	A16-189	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C8	10		A15-197	S110N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C9	270		A15-215	S1270	D6-271		GP2K-271	MC-240	1FM-325	
C10	50		A15-194		TCN-50					
C11	220	500	A15-218	1468-00025	D6-221	5W5T25	GP2K-221	MC-240	1FM-325	
C12	.01	400	A16-192	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C13	.005	600	A16-190	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C14	.01	400	A16-192	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C15	.02	600	A16-206	P688-02	DD-203	PTE4S2		PT412	6TM-S2	
C16	.005	600	A16-177	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C17	5000		A16-190	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C18	5000		A16-177	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C19	.2	400	A16-188	P488-2		PTE4P22		PT402	4TM-P22	
C20	.5	100	A16-215	VHC-36		MP2P5		RF-480	2TM-P5	
C21	.5	100	A16-215	VHC-36		MP2P5		RF-480	2TM-P5	
C22	.007	1600	A16-207	BCD-24		PTE16D7		PT1627	LR-27	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ALLSTATE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	A24-183				UF55A	Tone
B	500KΩ	½	Not Req.				UR55-T254	Volume - tapped @ 170KΩ

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ALLSTATE PART No.	IRC PART No.	
R2	68KΩ	½	A60-775	BTS-68K	
R3	2.2Meg	½	A60-726	BTS-2.2Meg	
R4	10Meg	½	A60-728	BTS-10Meg	
R5	220Ω	½	A60-753	BTS-220	
R6	10KΩ	½	A60-760	BTS-10K	
R7	1Meg	½	A60-668	BTS-1Meg	
R8	22KΩ	½	A60-744	BTS-22K	
R9	22KΩ	1	A60-773	BTA-22K	
R10	56Ω	½	A60-806	BTS-56	
R11	2.2Meg	½	A60-726	BTS-2.2Meg	
R12	47KΩ	½	A60-730	BTS-47K	

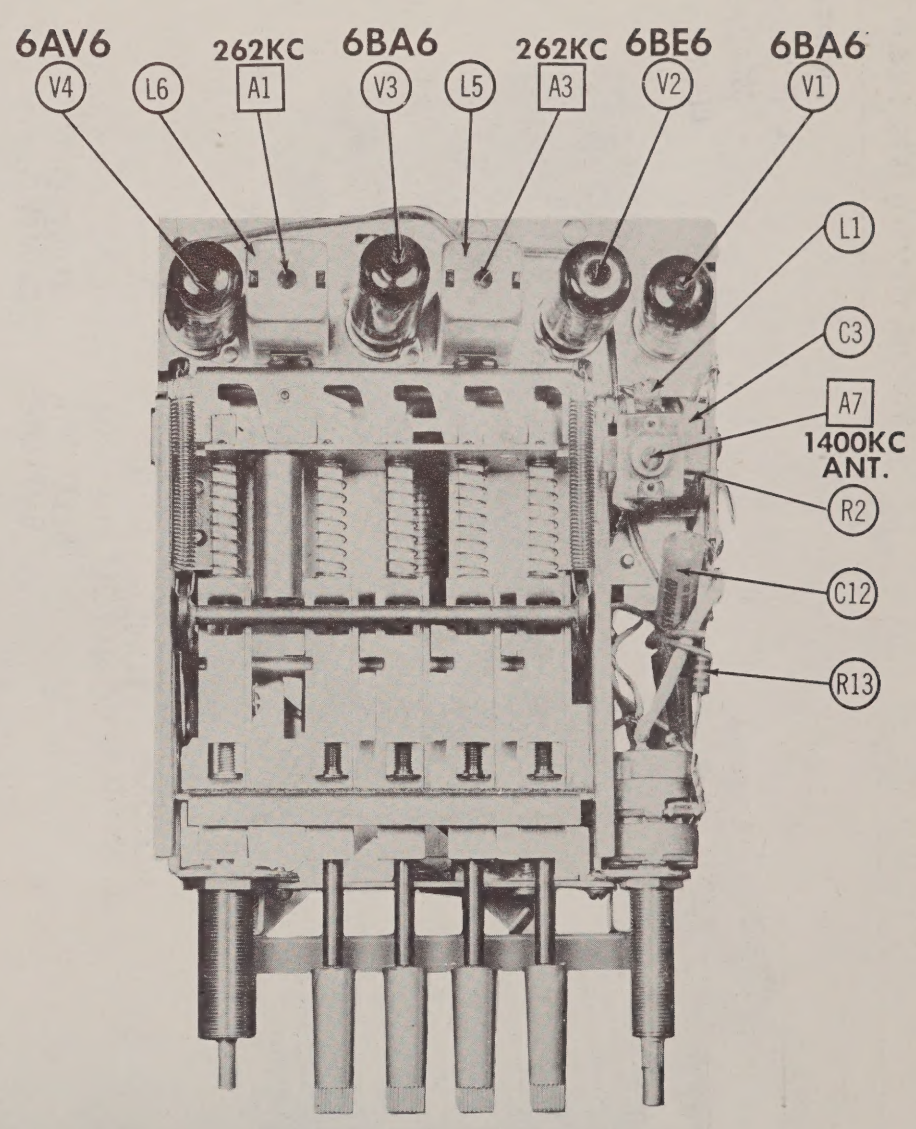
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ALLSTATE PART No.	IRC PART No.	
R13	68KΩ	½	A60-775	BTS-68K	
R14	10Meg	½	A60-728	BTS-10Meg	
R15	220KΩ	½	A60-672	BTS-220K	
R16	470Ω	1	A60-694	BTA-470	
R17	270Ω	1	A60-754	BTA-270	
R18	470KΩ	½	A60-731	BTS-470K	
R19	10KΩ	1	A60-698	BTA-10K	
R20	100Ω	½	A60-752	BTS-100	
R21	100Ω	½	A60-752	BTS-100	

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	ALLSTATE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	6.3VAC @2.75A	424VCT .040ADC			C80-258E	P-6301 ①			

① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		ALLSTATE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	5.2KΩ	3.5Ω	260Ω	.4Ω	80-251E	A-3877 ①	A-3019	RO-9 ①	S-3X ①	① Drill one mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ALLSTATE PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	6"X9"	PM	3.5Ω	79-409	ST-810 Mod P69-V ST-807	69A3	Speaker type (7" round or 6 x 9" oval) is dependent upon original installation requirements.
B	7"	PM	3.5Ω	79-410	Mod P7-T	7A31	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ALLSTATE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Loading Coil	.7Ω		A10-527			4612	10.6 Microhenries
L2	Ant. Coil	9.5Ω						Part of tuning assy. Complete tuning assy. part #S84-470.
L3	RF Coil	9.5Ω						Part of tuning assy.
L4	Osc. Coil	.3Ω	5.5Ω					Part of tuning assy.
L5	Input IF	37Ω	37Ω	A10-540	16-6752	BC-350	12-H1	
L6	Output IF	40Ω	40Ω	A10-537	16-6754	BC-354	12-H6	
L7	Fil. Choke	0Ω		A33-234			5221	9.6 Microhenries
L8	Vibrator Hash Choke	0Ω		A33-228			5221	6.7 Microhenries

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				ALLSTATE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	6.3V	115∿	A34-105	5301	859	5301	

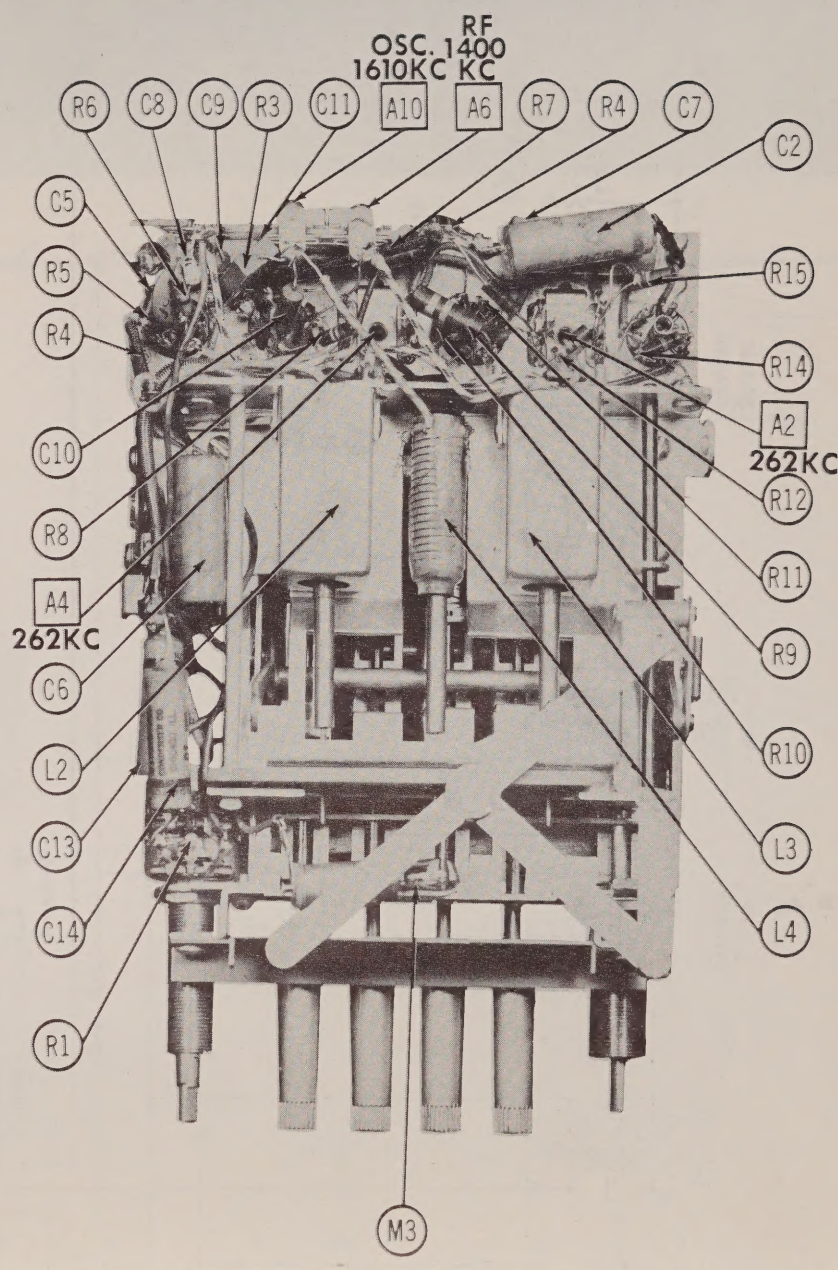
FUSES

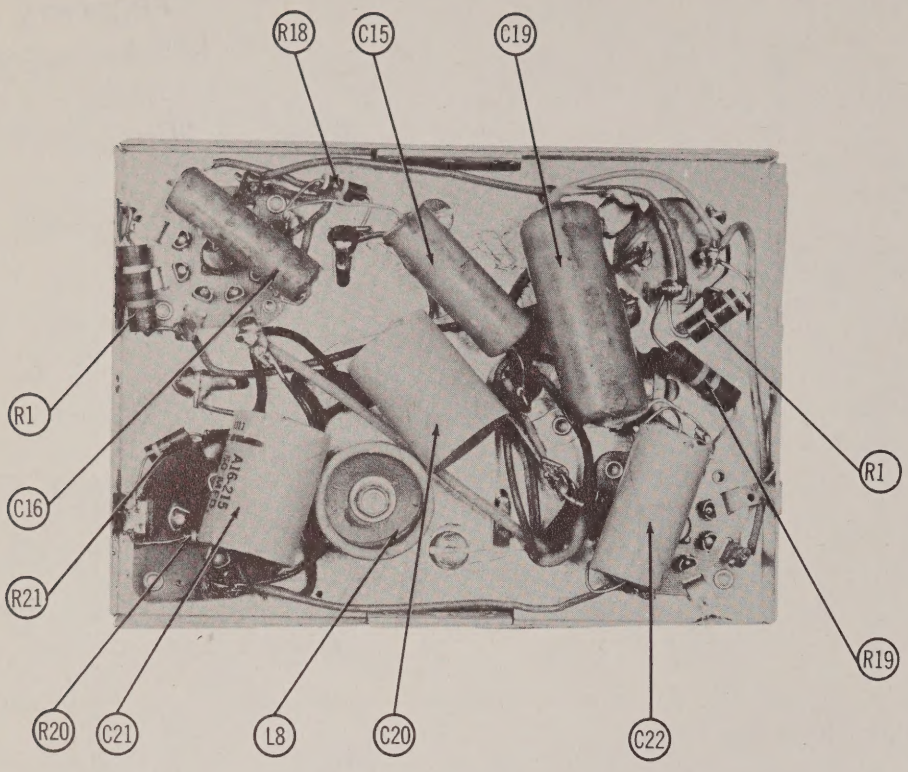
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ALLSTATE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	15A 32V	A43-10	S84-233	311015 (3AG-15A)	155020	AGC-15	HDJ

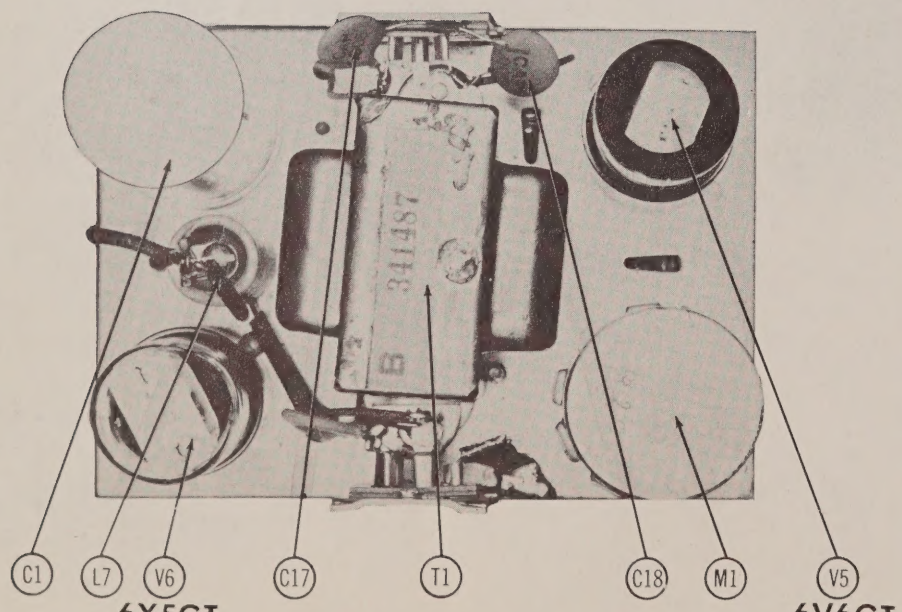
MISCELLANEOUS

ITEM No.	PART NAME	ALLSTATE PART No.	NOTES
M3	Dial Light	A89-7	#47 Bayonet
M4	Spark Plate	S84-573	Assembly
A7	Trimmer Cap.	A20-148	Antenna Trimmer
A5, A6	Trimmer Cap.	A20-147	RF & Osc. Trimmer - Dual
	Knob	B52-385	Tuning
	Knob	B52-384	Volume
	Knob	B52-383	Tone
	Knob	A56-141	Pusher nut, manual tuning
	Knob	A56-152	Pusher nut, pushbutton tuning (4 used)

CHASSIS—BOTTOM VIEW




R18
C15
C19
R1
C16
R21
R20
C21
L8
C20
C22
R1
R19


C1
L7
V6
C17
T1
C18
M1
V5

6X5GT

6V6GT

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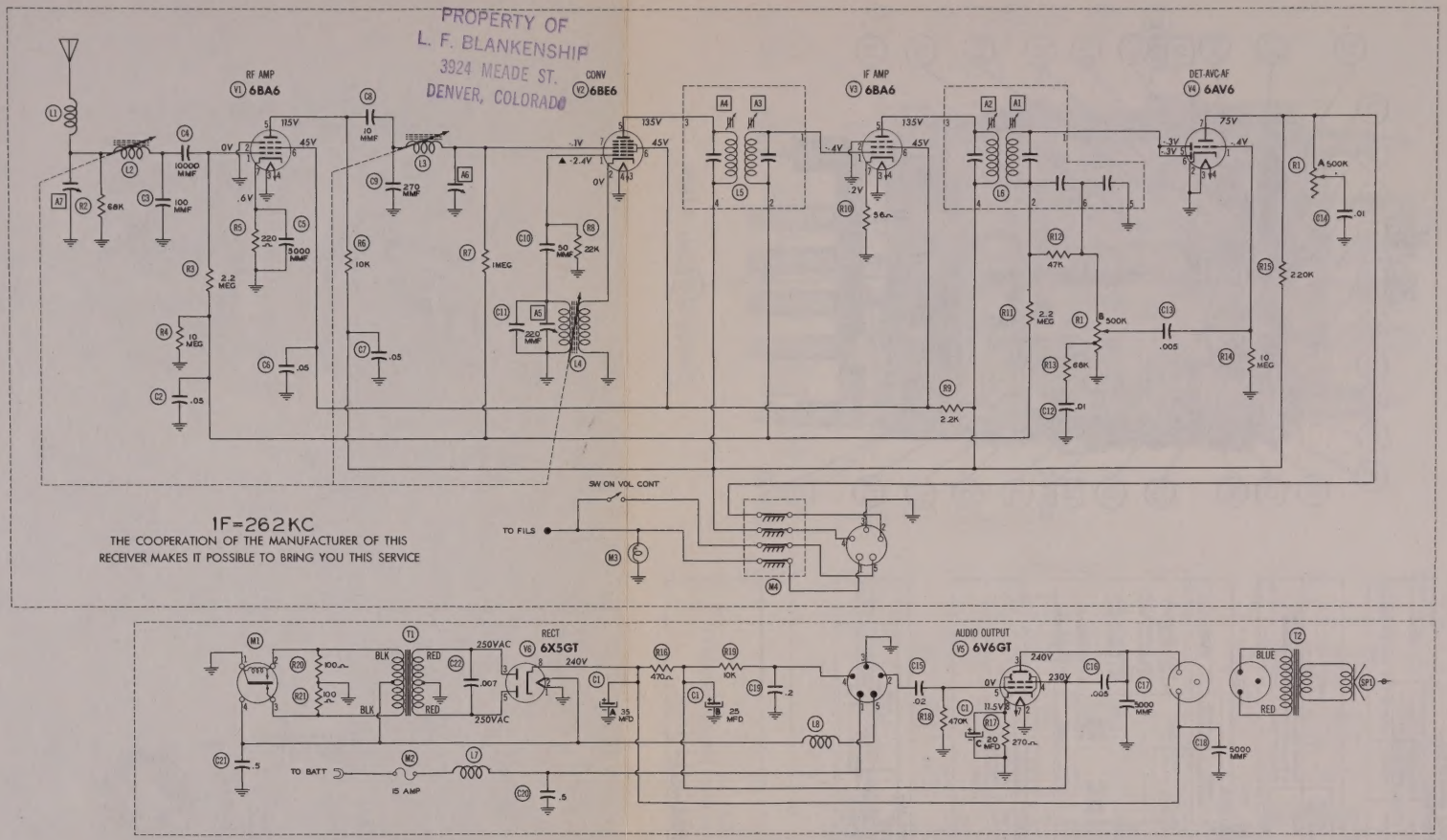

1 - DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	2.2Meg	0Ω	0Ω	.4Ω	†20.5KΩ	†32.5KΩ	220Ω	
V 2	6BE6	22K Ω	.3Ω	.4Ω	0Ω	†10.5KΩ	†32.5KΩ	3.2Meg	
V 3	6BA6	2.6Meg	0Ω	0Ω	.4Ω	†10.5KΩ	†32.5KΩ	56Ω	
V 4	6AV6	10Meg	0Ω	0Ω	.4Ω	400KΩ	400KΩ	†230KΩ	
V 5	6X5GT	0Ω	0Ω	†260Ω	†470Ω	470KΩ	†470Ω	.4Ω	270Ω
V 6	6X5GT	0Ω	.4Ω	390Ω	INT	370Ω	†10.5KΩ	0Ω	2.5Meg

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 8 OF V6

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PROPERTY OF
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3924 MEADE ST.
DENVER, COLORADO

AUTOMATIC
MODEL MM-430

AUTOMATIC
MODEL MM-430

TRADE NAME	Automatic Model MM-430 (For 1953 Mercury Automobiles)
MANUFACTURER	Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston, Mass.
TYPE SET	Battery Operated Automobile Superheterodyne Receiver
TUBES (Six)	Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AV6 (or) 6AT6 Det.-AVC-AF Amp., 6V6GT Audio Output, 6X5GT Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 5.2 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	538-1610KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455KC (400∿mod)	High frequency end stop	Across voice	A1, A2, A3, A4	Adjust for maximum output.
2.		"	1610KC	"	"	A5	"
3.	68MMF	High side to antenna receptacle. Low side to chassis.	1400KC	Tune to 1400KC signal	"	A6, A7	Adjust for maximum output. Repeat steps 2 and 3.
4.	With radio installed in car and antenna fully extended tune to a weak station near 1420KC and adjust A7 for maximum volume.						

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amp.	6BA6	6BA6	7BK	
V4A	Det-AVC-AF Amp.	6AV6	6AV6	7BT	
B	Det-AVC-AF Amp.	6AT6	6AT6	7BT	
V5	Audio Output	6V6GT	6V6GT	7S	
V6	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AUTOMATIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■20	350	CE-86	AFH3-107		CO80		FP345.8	TVL-3632	
B	▲20	350								
C	20	25								
C2	100		CC-101	1468-0001		5W5T1		MC-235	1FM-31	
C3	.047	200	C-503-2	P288-05	DF-503	PTE4S5		PT415	2TM-35	
C4	.006	200	C-602-4	P288-006	D6-602	PJ2D6	GP2-333-602	PT426	2TM-D6	
C5	.047	200	C-503-2	P288-05	DF-503	PTE4S5		PT415	2TM-S5	
C6	5		CC-50	SI5	D6-050		GP1K-050	NT-555	5GA-V5	
C7	40		CC-400	SI40	D6-400		GP1K-400	UC-5439	5GA-Q39	
C8A	220									
B	5000									
C	5000		*PC-151	*PA-113-2	*PC-151		*1408-02		*103C5	
D	250									
E										
C9	.005	200	C-502-2	P288-005	D6-502	PJ2D5	GP2-333-502	PT425	2TM-D5	
C10	.01	600	C-103-6	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C11	.5	100	C-504-1	VHC-36		MP2P5		RF-480	HC-3	
C12	.5	100	C-504-1	VHC-36		MP2P5		RF-480	HC-3	
C13	.008	1600	C-802-16	P1688-008		PTE16D8		PT1628	MB-D8	

* Items C8A, C8B, C8C, C8D, C8E, R9A, R9B and R9C are combined in one unit.
When replacing items separately items C8D and C8E should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	750KΩ	½	RV-57	Q13-137	AG-79-Z	B-70-S	U-51	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AUTOMATIC PART No.	IRC PART No.	NOTES
R2	470KΩ	½	R474	BTS-470K	
R3	150Ω	½	R151	BTS-150	Note 1.
R4	150KΩ	½	R154	BTS-150K	
R5	47KΩ	½	R473	BTS-47K	
R6	1500Ω	½		BTS-1500	Note 2.
R7	6800Ω	2	R682-2	BTB-6800	
R8	2.2Meg	½	R225	BTS-2.2Meg	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AUTOMATIC PART No.	IRC PART No.	NOTES
R9A	6.8Meg	½	* PC-151	BTS-6.8Meg	
B	470KΩ	½		BTS-470K	
C	470KΩ	½		BTS-470K	
R10	330Ω	½	R331	BTS-330	
R11	1000Ω	1	R102-1	BTA-1000	
R12	100Ω	½	R101	BTS-100	
R13	100Ω	½	R101	BTS-100	

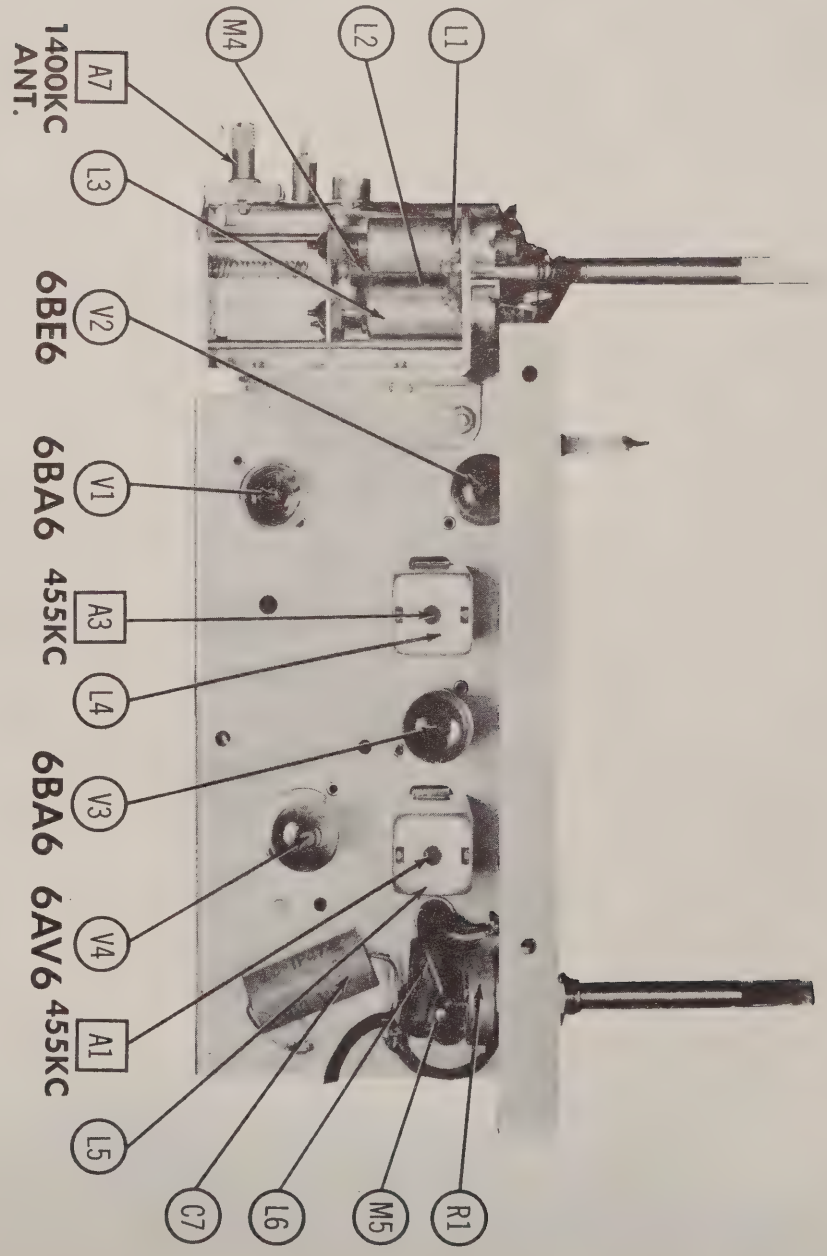
* Items R9A, R9B, C8A, C8B, C8C, C8D, C8E are combined in one unit.
Note 1. Some models may sue a 220Ω resistor in this application.
Note 2. Some models may sue a 1000Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AUTOMATIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	6.3VCT	400VCT			TV-100		P2971	VT-1 ①	V-16K
	② 2.6A	.053A							

① Drill new mounting holes.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		AUTOMATIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	5.1KΩ	4Ω	376Ω	.82Ω	TD-4502	A-3877	A-2930	RO-9 ①	S-3X	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	AUTOMATIC PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6"X9"	PM	4Ω	PM-901	ST-810 Mod P69-V	69A3	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	AUTOMATIC PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	19Ω						Part of tuner, Tuner Part # PT-500M
L2	RF Coil	13Ω						Part of Tuner
L3	Osc. Coil	.5Ω	2.4Ω					Part of Tuner
L4	Input IF	18Ω	18Ω	1655-16	16-6758	BC-352	12-C1	
L5	Output IF	18Ω	18Ω	1655-16	16-6758	BC-353	12-C2	
L6	Fil. Choke	0Ω		L203			5221	1.5 Microhenries
L7	Vibrator Hash Choke	0Ω		L202A			5221	17 Microhenries

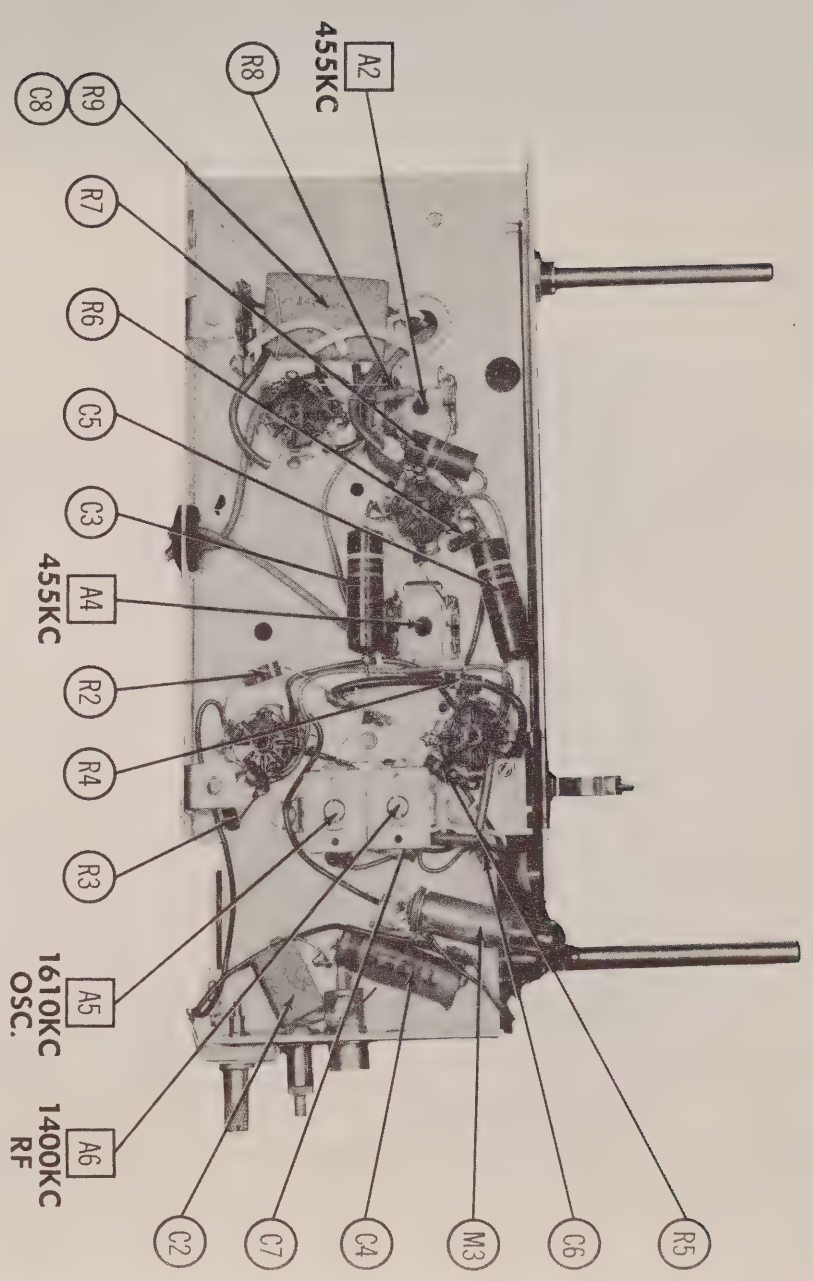
VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA				NOTES
				AUTOMATIC PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	6.3V	115v	V-83A	5301	859	5301	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			AUTOMATIC PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A	A200	FH226	307014. (SFE-14A)	155014	SFE14	HDI

CHASSIS—BOTTOM VIEW



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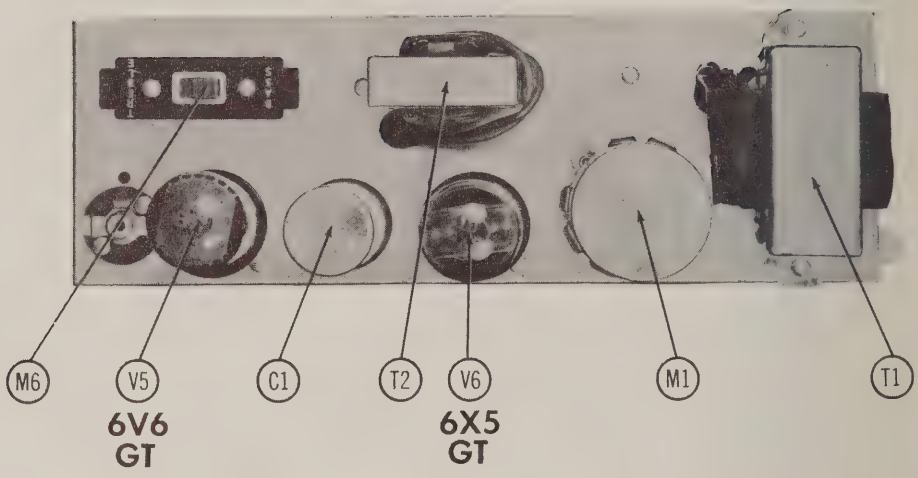

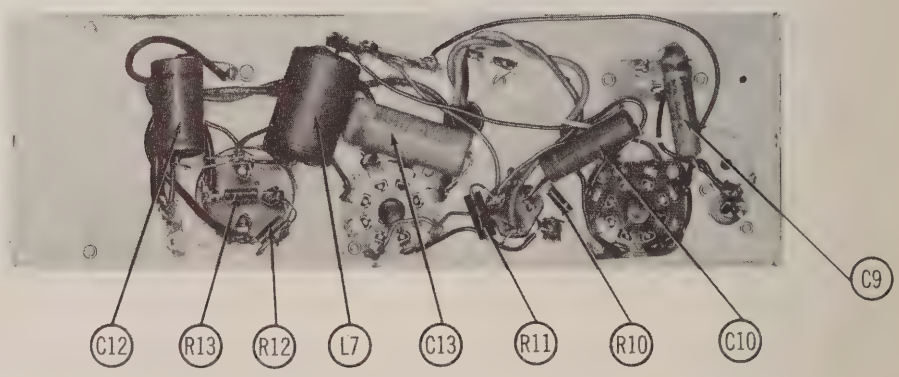

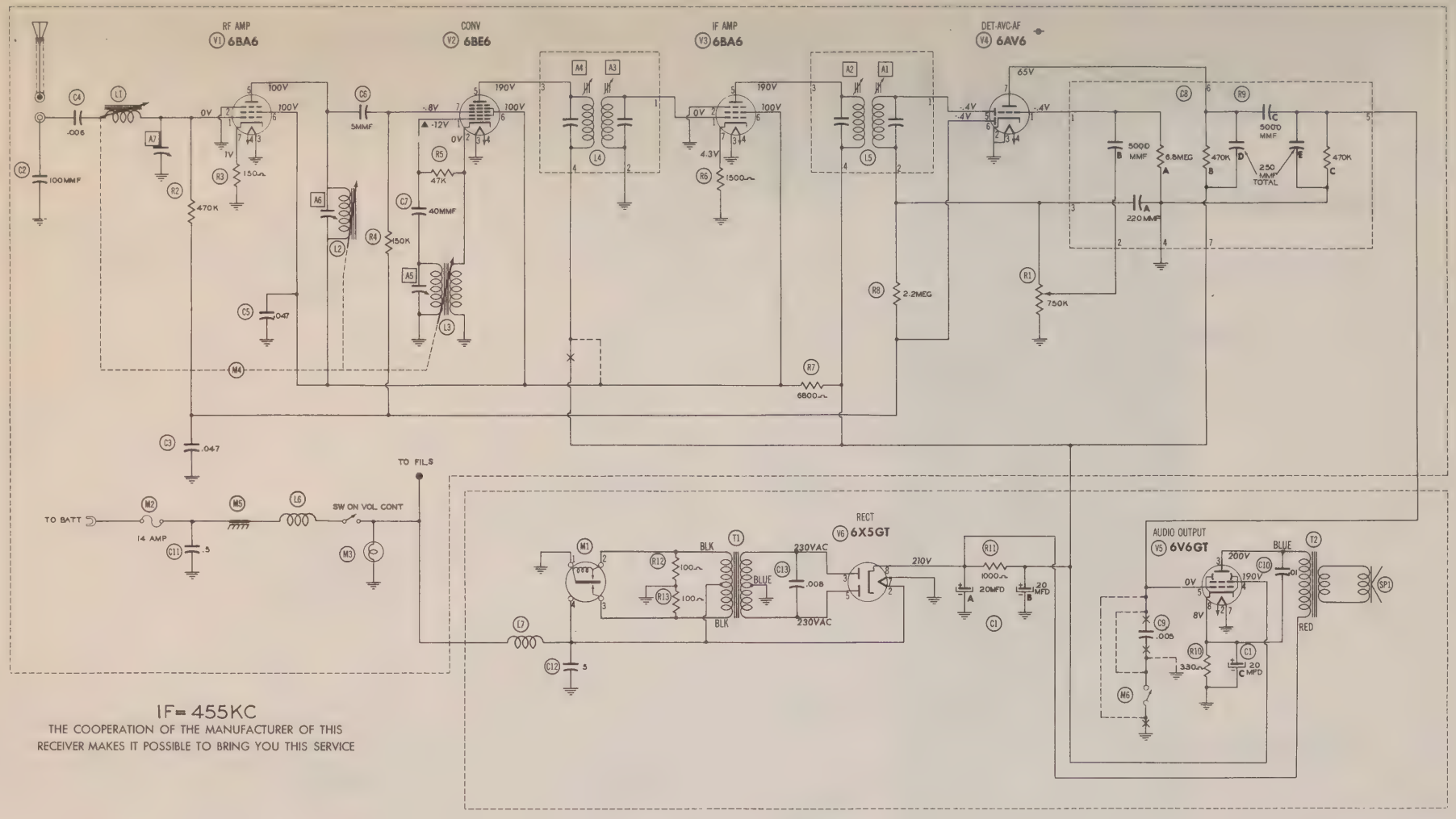

IF= 455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	3.4Meg	0Ω	0Ω	.7Ω	† 7.8KΩ	† 7.8KΩ	180Ω	
V 2	6BE6	47KΩ	.5Ω	0Ω	.7Ω	† 1KΩ	† 7.8KΩ	3.1Meg	
V 3	6BA6	18Ω	0Ω	0Ω	.7Ω	† 1KΩ	† 7.8KΩ	1.5KΩ	
V 4	6AV6	6.8Meg	0Ω	0Ω	.7Ω	750KΩ	3Meg	† 470KΩ	
V 5	6V6GT	INF	.7Ω	† 375Ω	† 1KΩ	470KΩ	INF	0Ω	330Ω
V 6	6X5GT	INF	.7Ω	255Ω	INF	286Ω	INF	0Ω	2Meg

▲TAKEN WITH VACUUM TUBE VOLTMETER.
† MEASURED FROM PIN 8 OF V6.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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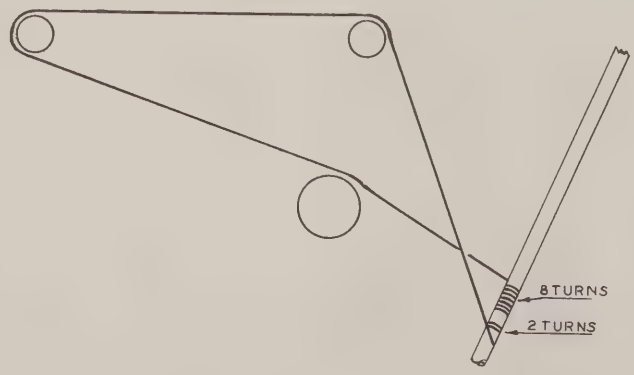
229-3

1 - DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

PARTS LIST AND DESCRIPTIONS (Continued)

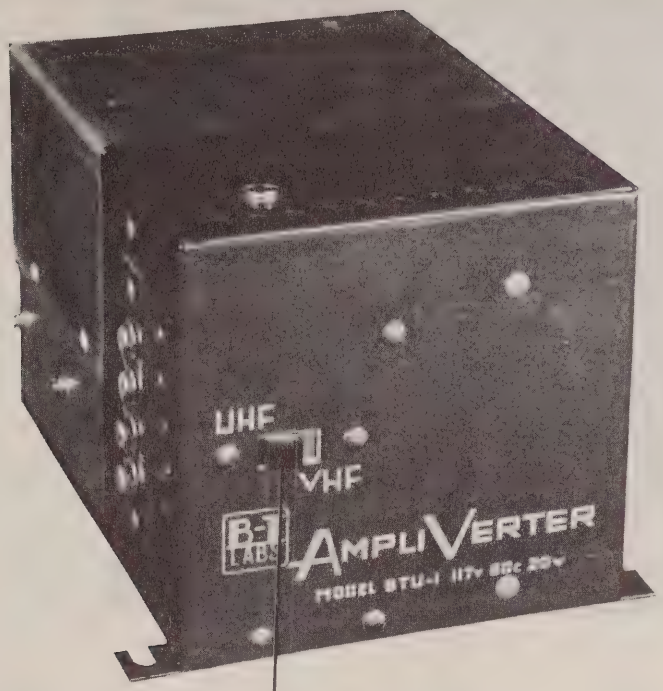
MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M3	Dial light	T47	# 47 bayonet
M4	Tuner	PT-500M	Permeable
M5	Spark plate		
M6	Switch	SS-1	Tone (s. p. s. t. slide)
A7	Trimmer cap	CT-1	Antenna compensator
A6	Trimmer cap	CT-2	R. F. trimmer
A5	Trimmer cap	CT-3	Osc. trimmer
	Case	H430	Less cover
	Cover	H431	Front, with mounting bushings
	Knob	H310E	(2) off-on volume and tuning
	Dial scale	D430	
	Escutcheon	E430	
	Pointer	PS430	



DRIVE CORD STRINGING

BLONDER-TONGUE
BTU-1-(14-83) (UHF Conv.)



VHF-UHF SELECTOR SWITCH

L. F. E. ANKENSTUP
3924 MILDE ST
DENVER, COLORADO

BLONDER-TONGUE
BTU-1-(14-83) (UHF Conv.)

TRADE NAME	Blonder-Tongue Ampliverter Model BTU-1-(14-83)
MANUFACTURER	Blonder-Tongue Laboratories, Inc., 526-536 North Ave., Westfield,N.J.
TYPE SET	AC Operated Single Channel UHF Converter
TUBES (Three)	Types 6AF4 UHF Osc., 6BK7A RF Amp., 6CB6 IF Amp.
POWER SUPPLY	110-120 Volts AC RATING .16 Amp. @ 117 Volts AC
TUNING RANGE	Any one UHF Channel

The output of the converter is preset at the factory to channel 5. If it is desired to convert to channel 6, adjust as follows:

1. Insert alignment tool through hole provided in cover for that purpose and rotate brass screw, A1, in front of 6AF4 (V1) 1/6 turn in clockwise direction.
2. Adjust fine tuning screw, A2, near UHF input terminals, for best picture on channel 6.
3. If necessary, readjust A1 very slightly for best performance.

If converter is used as adjusted at factory for channel 5 , it may be necessary to adjust A2 slightly for best performance.

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PARTS LIST AND DESCRIPTIONS

BLONDER TONGUE
MODEL BTU-1-(14-83)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		Blonder-Tongue PART No.	STANDARD REPLACEMENT		
V1	UHF Oscillator	6AF4	6AF4	7DK	
V2	RF Amplifier	6BK7A	6BK7A	9AJ	
V3	IF Amplifier	6CB6	6CB6	7CM	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Blonder-Tongue PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150		PRS150/50-		BRD5315A		TCD497	TVA-2450	Red
B	30	150		30						Plain
C2	40	200		AFH1-28						
C3	1000			CN-1-001	MFT-1000				503C-D1	
C4	1000			CN-1-001	MFT-1000				503C-D1	
C5	5									
C6	10			SI10	D6-100		GP1K-100	UC-541	5GA-Q1	
C7	1000			CN-1-001	MFT-1000				503C-D1	
C8	330			SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C9	330			SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C10	330			SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C11	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C12	5			SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C13	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C14	2.2			SI2.2NP0	TCZ-2.2		NP0K-2R2		5TCCB-V22	
C15	330			SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C16	3.3			SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C17	10			SI10	D6-100		GP1K-100	UC-541	5GA-Q1	
C18	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C19	330			SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C20	330			SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C21	330			SI330	D6-331		GP2K-331	UC-5333	5GA-T33	

RESISTORS

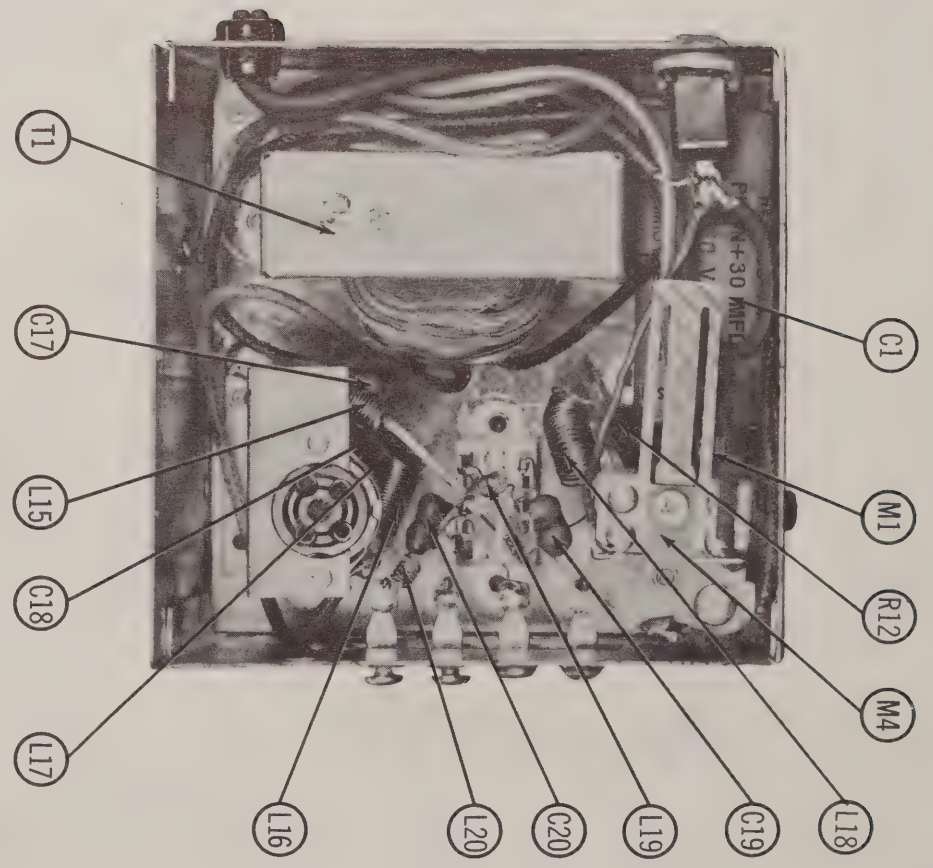
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Blonder-Tongue PART No.	IRC PART No.	
R1	10KΩ	½		BTS-10K	
R2	2700Ω	½		BTS-2700	
R3	1800Ω	½		BTS-1800	
R4	47Ω	½			
R5	180Ω	½		BTS-180	
R6	1500Ω	½		BTS-1500	
R7	220Ω	½		BTS-220	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Blonder-Tongue PART No.	IRC PART No.	
R8	4700Ω	½		BTS-4700	
R9	180Ω	½		BTS-180	
R10	100Ω	½			
R11	100Ω	½			
R12	150Ω	1		BTA-150	

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	Blonder-Tongue PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @.16A	165V .031A	6.3V 1.84A						

CHASSIS—SIDE VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

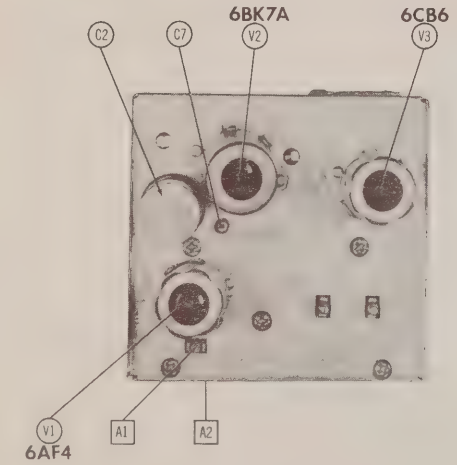
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Blonder-Tongue PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Trans.	0Ω	0Ω					
L2	RF Coil	0Ω						
L3	Osc. Coil	0Ω						
L4	Cathode Choke	0Ω						
L5	Fil. Choke	0Ω						
L6	Fil. Choke	0Ω						
L7	RF Choke	0Ω						
L8	RF Choke	.6Ω						
L9	RF Choke	0Ω						
L10	IF Coupling	0Ω						
L11	Cathode Choke	0Ω						
L12	RF Choke	0Ω						
L13	RF Choke	0Ω						
L14	RF Choke	0Ω						
L15	RF Choke	0Ω						
L16	RF Choke	0Ω						
L17	RF Choke	0Ω						
L18	RF Filter Choke	0Ω						
L19	IF Coupling	0Ω						
L20	IF Coupling	0Ω						

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT	Blonder-Tongue PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	
M1	.031A		8J1	1002A	6S65	65	

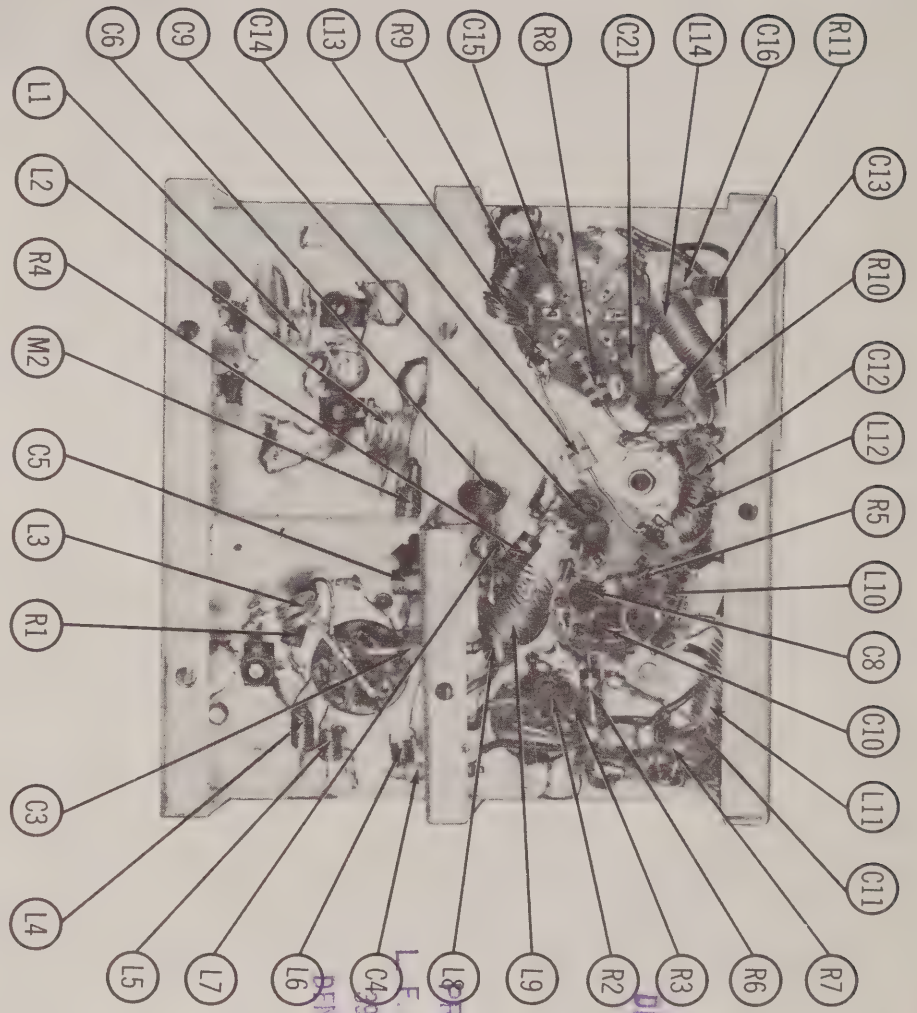
MISCELLANEOUS

ITEM No.	PART NAME	Blonder-Tongue PART No.	NOTES
M2	Crystal diode		UHF Mixer
M3	Switch		VHF-UHF Selector
M4	Switch		Off-on (thermal)



CHASSIS—TOP VIEW

CHASSIS—BOTTOM VIEW



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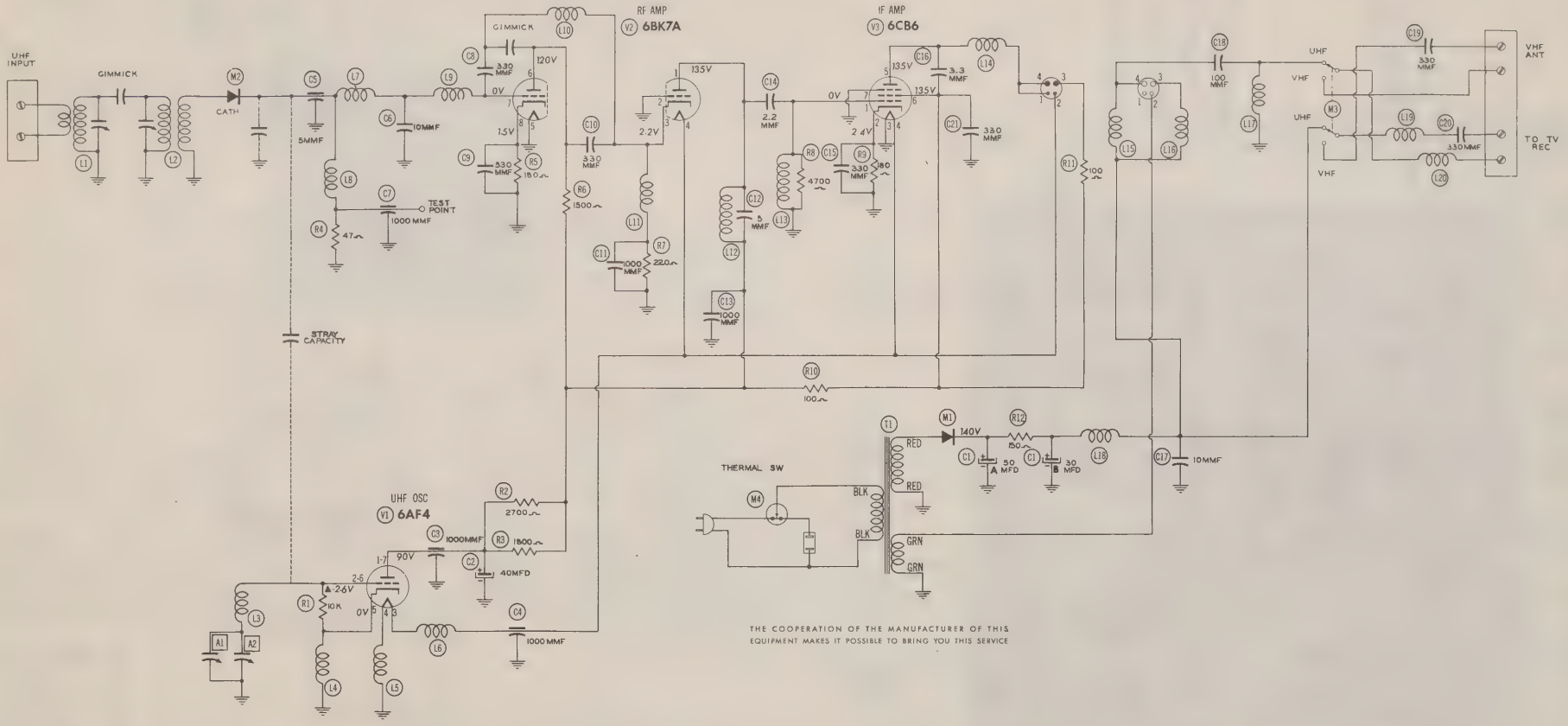

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AF4	†1.4KΩ	10KΩ	.1Ω	0Ω	0Ω	10KΩ	†1.4KΩ		
V 2	6BK7A	†350Ω	0Ω	220Ω	.1Ω	0Ω	†1.9KΩ	47Ω	180Ω	0Ω
V 3	6CB6	0Ω	180Ω	0Ω	.1Ω	†150Ω	†250Ω	0Ω		

ALL MEASUREMENTS TAKEN IN "UHF" POSITION
▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM OUTPUT OF M1

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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229-4

1 - DC voltage measurements are at 20,000 ohms per volt, AC voltage measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.

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3924 MEADE ST
DENVER, COLORADO

BROCINER
MODEL UL-1

BROCINER
MODEL UL-1

TRADE NAME	Brociner Model UL-1
MANUFACTURER	Brociner Electronics Laboratory, 1546 Second Ave., New York 28, N.Y.
TYPE SET	AC Operated 50 Watt Audio Amplifier
TUBES (Five)	Types 12AU7 AF Amp., 12AU7 Phase Inv., (2) KT66 Audio Output, 5V4G Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING 1.17 Amps. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

BROCINER MODEL UL-1

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		BROCINER PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier	12AU7	12AU7	9A	
V2	Phase Inverter	12AU7	12AU7	9A	
V3	Audio Output	KT66	KT66	7S	
V4	Audio Output	KT66	KT66	7S	
V5	Rectifier	5V4G	5V4G	5L	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	BROCINER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	8	600		GL600/8		KR608C		HS693	AP-86	
C2	16	600		GL600/16		KR616C		HS696	AP-16	
C3	16	600		GL600/16		KR616C		HS696	AP-16	
C4	16	500		PRS500/16		BR1650		TC83	TVA-1905	
C5	16	500		PRS500/16		BR1650		TC83	TVA-1905	
C6	100	50		PRS50/100		BRH501		TC3501	TVA-1310	
C7	.02	200		P288-02		PTE4S2		PT412	2TM-S2	
C8	.1	600		P688-1		PTE6P1		PT601	6TM-P1	
C9	.1	600		P688-1		PTE6P1		PT601	6TM-P1	
C10	.1	600		P688-1		PTE6P1		PT601	6TM-P1	
C11	.1	600		P688-1		PTE6P1		PT601	6TM-P1	
C12	91	500								
C13	1000	500		1468-0001		5W5T1		MC-235	1FM-31	
C14	.25	200		P288-25		PTE4P25		PT4025	2TM-P25	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BROCINER PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	250Ω	2		WK250	A43-300		R250L	Hum control - wire wound
B	Shaft			Not Req.	FKS-1/4		Not Req.	Attach to R1A

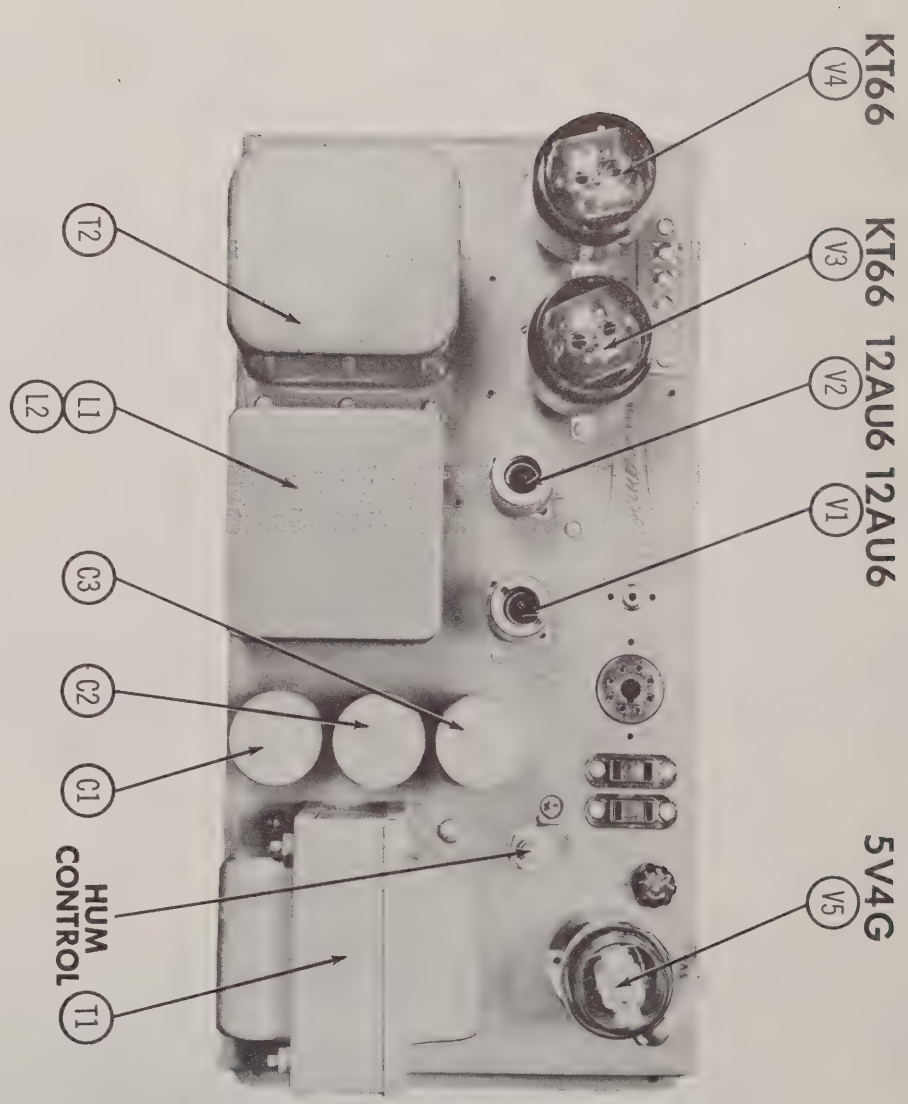
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	BROCINER PART No.	IRC PART No.	
R2	10KΩ	½		BTS-10K	
R3	1Meg	½		BTS-1Meg	
R4	470Ω	½		BTS-470	
R5	47KΩ	1		BTA-47K	
R6	22KΩ 1%	1			Note
R7	22KΩ 1%	1			Note
R8	4. 7Meg	½		BTS-4. 7Meg	
R9	4. 7Meg	½		BTS-4. 7Meg	
R10	560Ω	½		BTS-560	
R11	560Ω	½		BTS-560	
R12	560Ω	½		BTS-560	
R13	47K 1%	1			Note
R14	47KΩ 1%	1			Note

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	BROCINER PART No.	IRC PART No.	
R15	1000Ω	½		BTS-1000	
R16	100KΩ 1%	½		DCF-100K 1%	Note
R17	100Ω	½		BTS-1000	
R18	100KΩ 1%	½		DCF-100K 1%	Note
R19	350Ω	10		1 3/4A350	
R20	22KΩ	1		BTA-22K	
R21	47KΩ	1		BTA-47K	
R22	15KΩ	½		BTS-15K	
R23	680Ω	½		BTS-680	
R24	4700Ω	½		BTS-4700	

Note: Replace with original 1% resistors only.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	BROCINER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @1.17A	820VCT .135ADC	5VAC @ 3A	6.3VAC @3.5A		PC-8412 ①	P-3155 ①		

① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		BROCINER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	9.4KΩ	16Ω tap @ 8Ω, 4Ω	323Ω CT tap @ 138Ω CT	1.26Ω tap @ .98Ω, .5Ω					HSM189 ①	① Drill new mounting holes

FILTER CHOKE

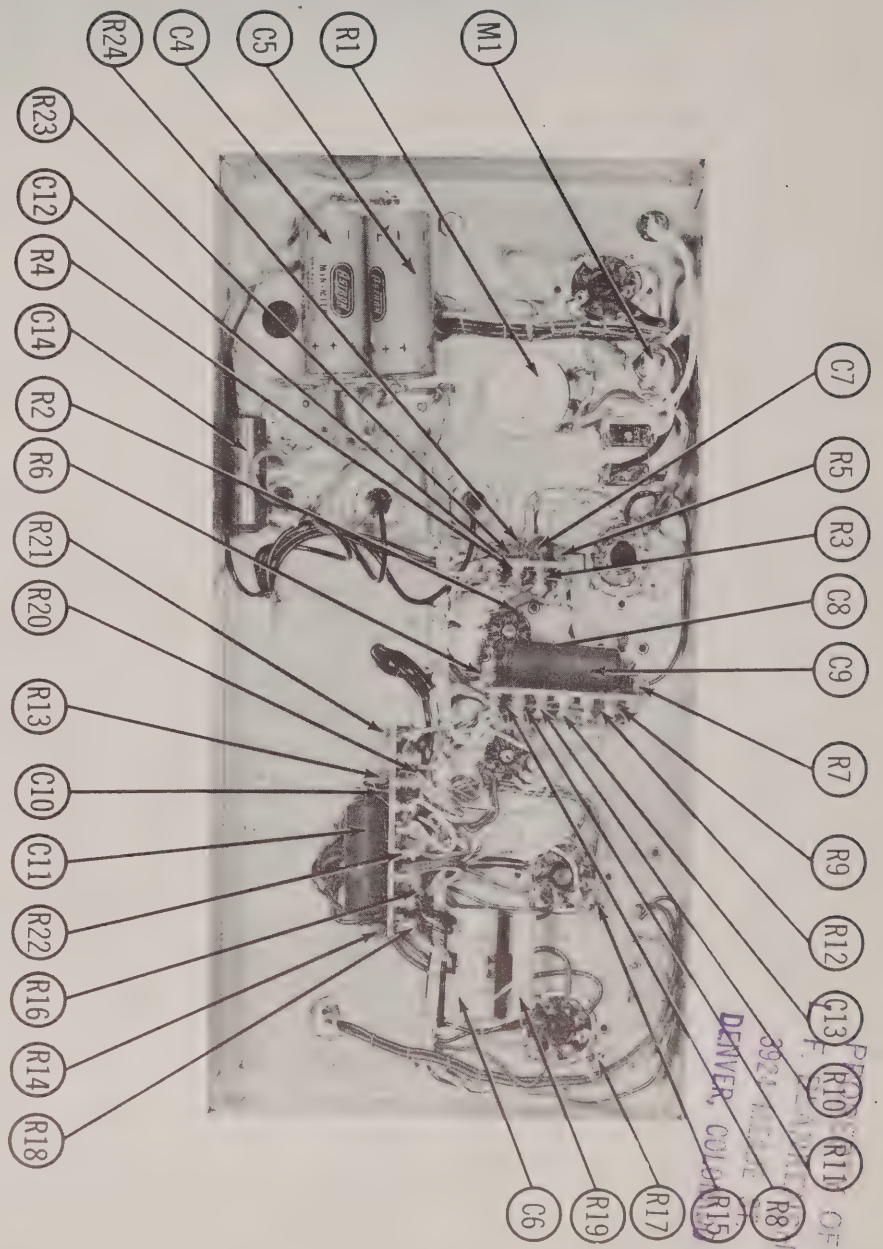
ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	BROCINER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	132A	102Ω	2.9 Hy.	①				
L2	.022A	88Ω	2.15 Hy.	①				

① Both chokes are mounted in one unit.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BROCINER PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3A			312003.	342003	AGC3	HKP

CHASSIS—BOTTOM VIEW



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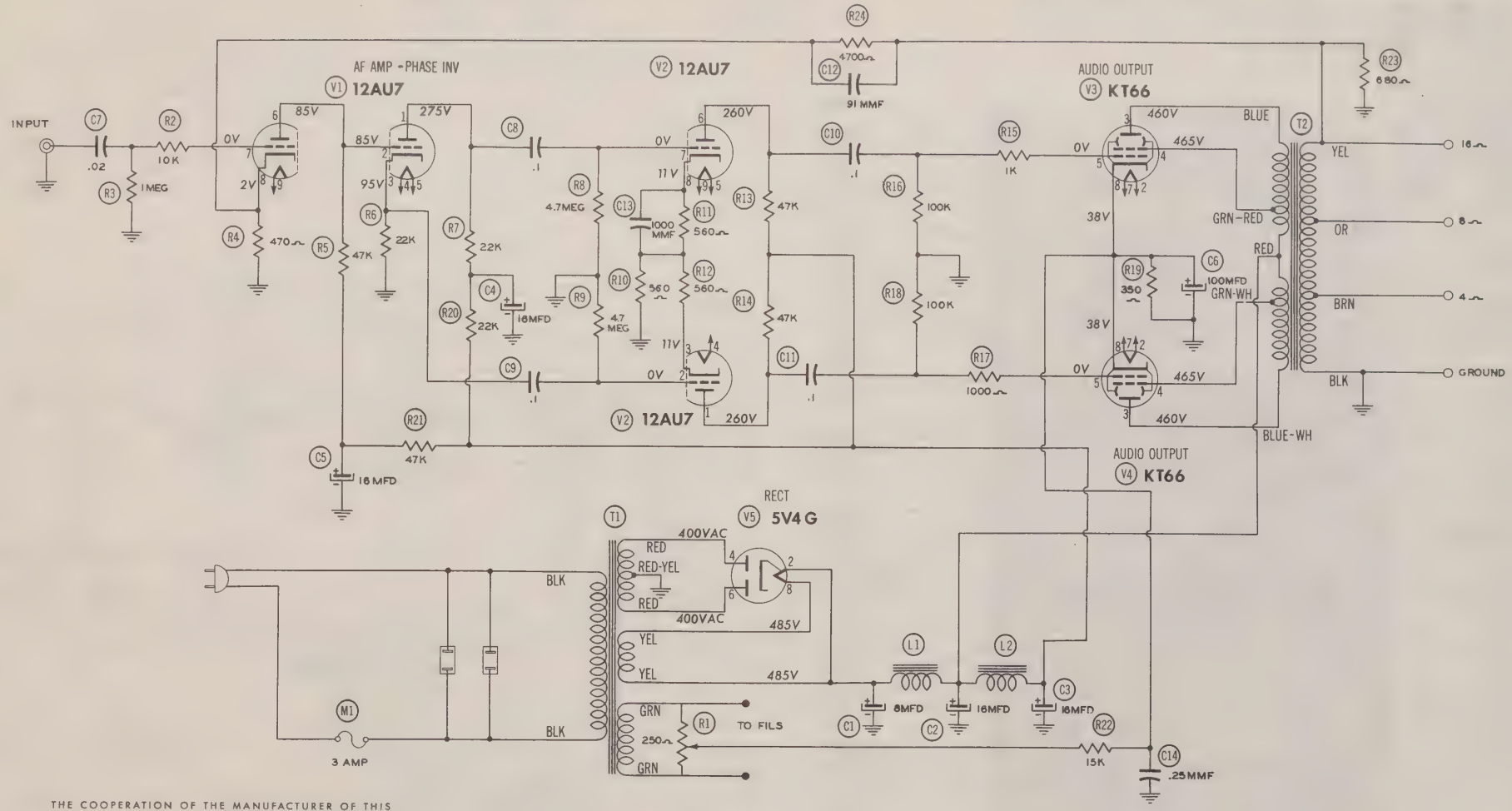
BROCINER MODEL UL-1



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AU7	†44KΩ	†94KΩ	22KΩ	15.5KΩ	15.5KΩ	†94KΩ	1Meg	470Ω	15.5KΩ
V 2	12AU7	†47KΩ	4.7Meg	1.1KΩ	15.5KΩ	15.5KΩ	†47KΩ	4.7Meg	1.1KΩ	15.5KΩ
V 3	KT66	0Ω	15.5KΩ	†110Ω	†105Ω	100KΩ	100KΩ	15.5KΩ	350Ω	
V 4	KT66	0Ω	15.5KΩ	†110Ω	†105Ω	100KΩ	100KΩ	15.5KΩ	350Ω	
V 5	5V4G	INF	1Meg	INF	52Ω	INF	57Ω	INF	1Meg	

† MEASURED FROM PIN 2 OF V5.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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229-5

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a varation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

FISHER
MODEL 50-A

TRADE NAME	Fisher Model 50-A
MANUFACTURER	Fisher Radio Corp., 45-41 Van Dam St., Long Island City 1, N.Y.
TYPE SET	AC Operated 40 Watt Audio Amplifier
TUBES (Nine)	Types 12AU7 AF Amp. -Bias Volt. Reg., 12AU7 Phase Inv., 12AU7 AF Amp., (2) 6S4 Driver, (2) 1614 Audio Output, (2) 5V4G or (2) 5AW4 Rectifier
POWER SUPPLY	110-120 Volts AC RATING 1.4 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

FISHER MODEL 50-A

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: FISHER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	AF Amplifier Bias Voltage Req.	12AU7	12AU7	9A	
V2	Phase Inverter	12AU7	12AU7	9A	
V3	AF Amplifier	12AU7	12AU7	9A	
V4	Driver	6S4	6S4	9AC	
V5	Driver	6S4	6S4	9AC	
V6	Audio Output	1614	1614	7S	
V7	Audio Output	1614	1614	7S	
V8	Rectifier	5V4G	5V4G	5L	Late versions used 5AW4 rectifier tubes
V9	Rectifier	5V4G	5V4G	5L	

CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FISHER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1	▲80	500	C-507-117	AFH1-62		AO56		FP288		
C2A	▲40	450	C-1798	AFH2-57		BO45		FP238	TVL-2764	
B	▲40	450								
C3A	▲40	450	C-1798	AFH2-57		BO45		FP238	TVL-2764	
B	▲40	450								
C4A	▲20	100						[TCS45 TC45		
B	■20	100	C-507-118							
C	▲20	100								
C5	1	450	C-3290	PRS450/4		BR145			R1260	
C6	20	150	C-3289	PRS150/20		BR2015A		TC45	TVA-1410	
C7	20	150	C-3289	PRS150/20		BR2015A		TC45	TVA-1410	
C8	.1	400	C-3156	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C9	.1	400	C-3156	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C10	150		C-3315	SI150	D6-151	TM5T15	GP1K-151	UC-5315	5GA-T15	
C11	1800		C-3327	SI1800	D6-182		GP2-333-182	UC-5218	5GA-D18	
C12	.01	400	C-3155	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C13	.01	400	C-3155	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C14	.1	400	C-3156	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C15	.1	400	C-3156	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C16	.0022	1600	C-3313	P1688-0022		PTE16S25		PT16222	MB-D22	
C17	.01	1000	C-2747	P1088-01		PT16S1		PT16I1	MB-S1	
C18	.01	1000		P1088-01		PT16S1		PT16I1	MB-S1	

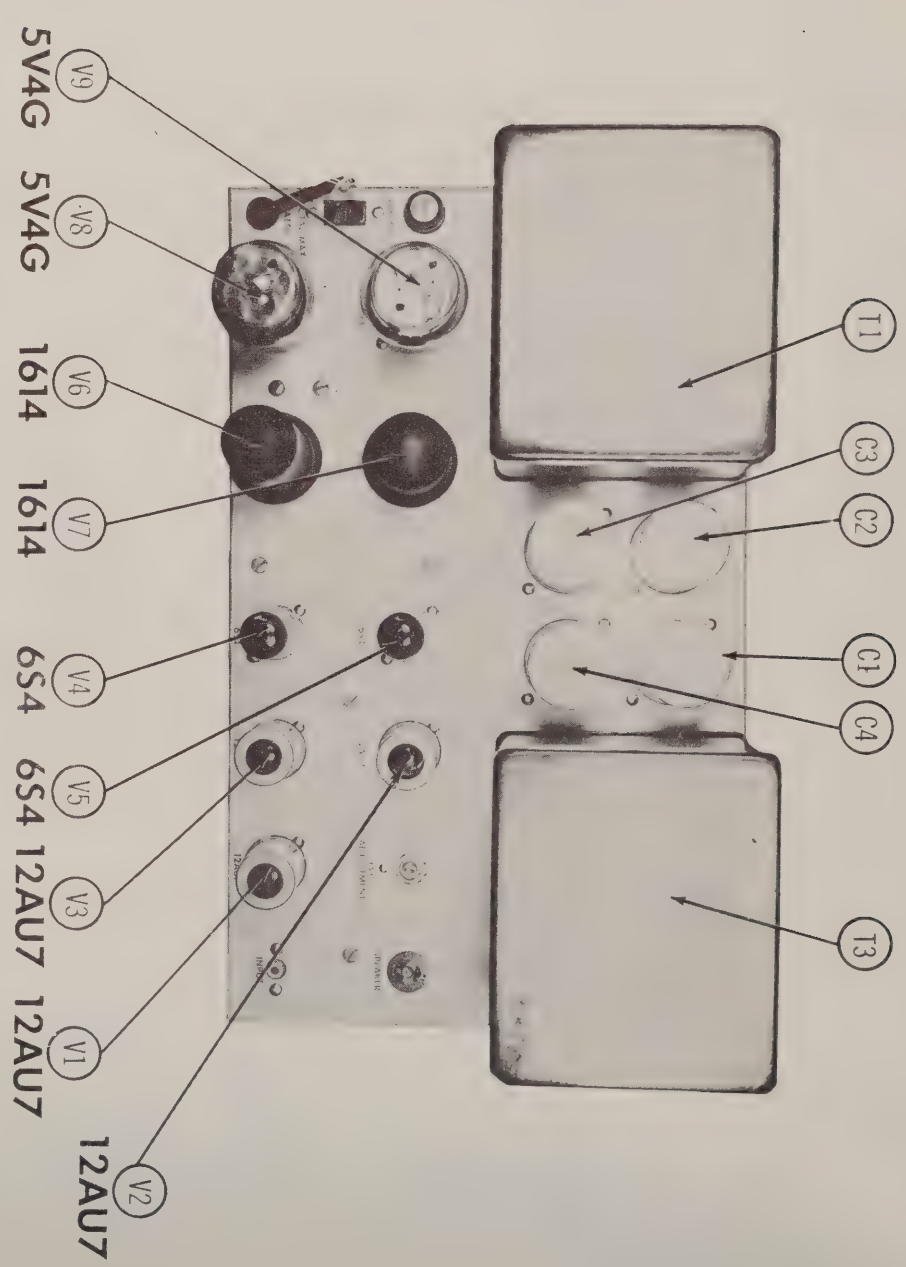
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FISHER PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	R-2815-9	Q11-133	AG-58-S	AB-59	SU-50	Level adjustment
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R1A
R2A	10KΩ	2	R-2815-11	WK-10000	A43-10K	VK-137	R10000L	Bias-wire wound
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R2A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: FISHER PART No.	IRC PART No.	NOTES
R3	4700Ω	½	R-1923	BTS-4700	
R4	100KΩ	½	R-1583	BTS-100K	
R5	470KΩ	½	R-1836	BTS-470K	
R6	2200Ω	½	R-1737	BTS-2200	
R7	1000Ω	½	R-1577	BTS-1000	
R8	2200Ω	½	R-1737	BTS-2200	
R9	47KΩ	½	R-1580	BTS-47K	
R10	47KΩ	½	R-1580	BTS-47K	
R11	47KΩ	½	R-1580	BTS-47K	
R12	100KΩ	½	R-1583	BTS-100K	
R13	470KΩ	½	R-1836	BTS-470K	
R14	4700Ω	½	R-1923	BTS-4700	
R15	470KΩ	½	R-1836	BTS-470K	
R16	100KΩ	½	R-1583	BTS-100K	
R17	100KΩ	½	R-1583	BTS-100K	
R18	2. 2Meg	½	R-1734	BTS-2. 2Meg	
R19	2. 2Meg	½	R-1734	BTS-2. 2Meg	
R20	68Ω	½	R-1814		
R21	68Ω	½	R-1814		
R22	4000Ω	15	R-3291	2D-4000	
R23	2700Ω	½	R-1738	BTS-2700	
R24	4700Ω	½	R-1923	BTS-4700	
R25	10KΩ	½	R-1531	BTS-10K	
R26	4700Ω	½	R-1923	BTS-4700	
R27	2200Ω	½	R-1737	BTS-2200	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	FISHER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @1.4A	1060VCT .180ADC	5VAC @ 6A	6.3VAC @3.2A SEC. 4 6.3VCT @1.5A	507-112				

TRANSFORMER (INTERSTAGE)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	FISHER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T2	586Ω CT .050A	1.52KΩ			507-1104				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		FISHER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T3	3KΩ CT	16Ω tap @ 8Ω	90Ω CT	.48Ω tap @ .4Ω	507-115	A-8052 ①				① Drill new mounting holes.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	FISHER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.180ADC	63Ω	3.15 Hy.	507-113				

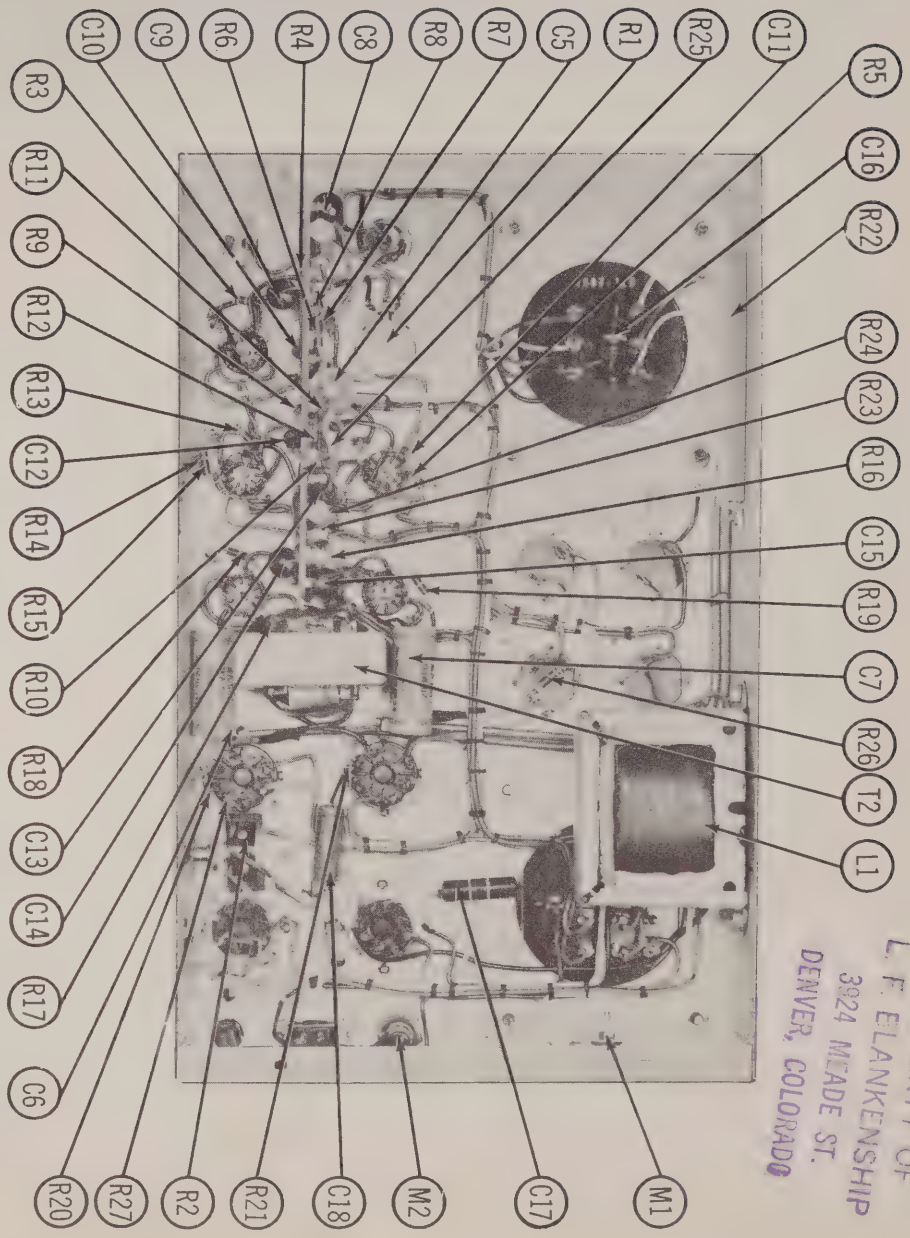
SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT	FISHER PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	
M1	.010	SR-3180	8Y1	1159 ①	8S20	35	① Install terminal strip.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			FISHER PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG S/B	3 2/10A 125V	F-3319		31303.2 (3AG S/B-3.2A)	342001	MDX 3 2/10	HKP

CHASSIS—BOTTOM VIEW



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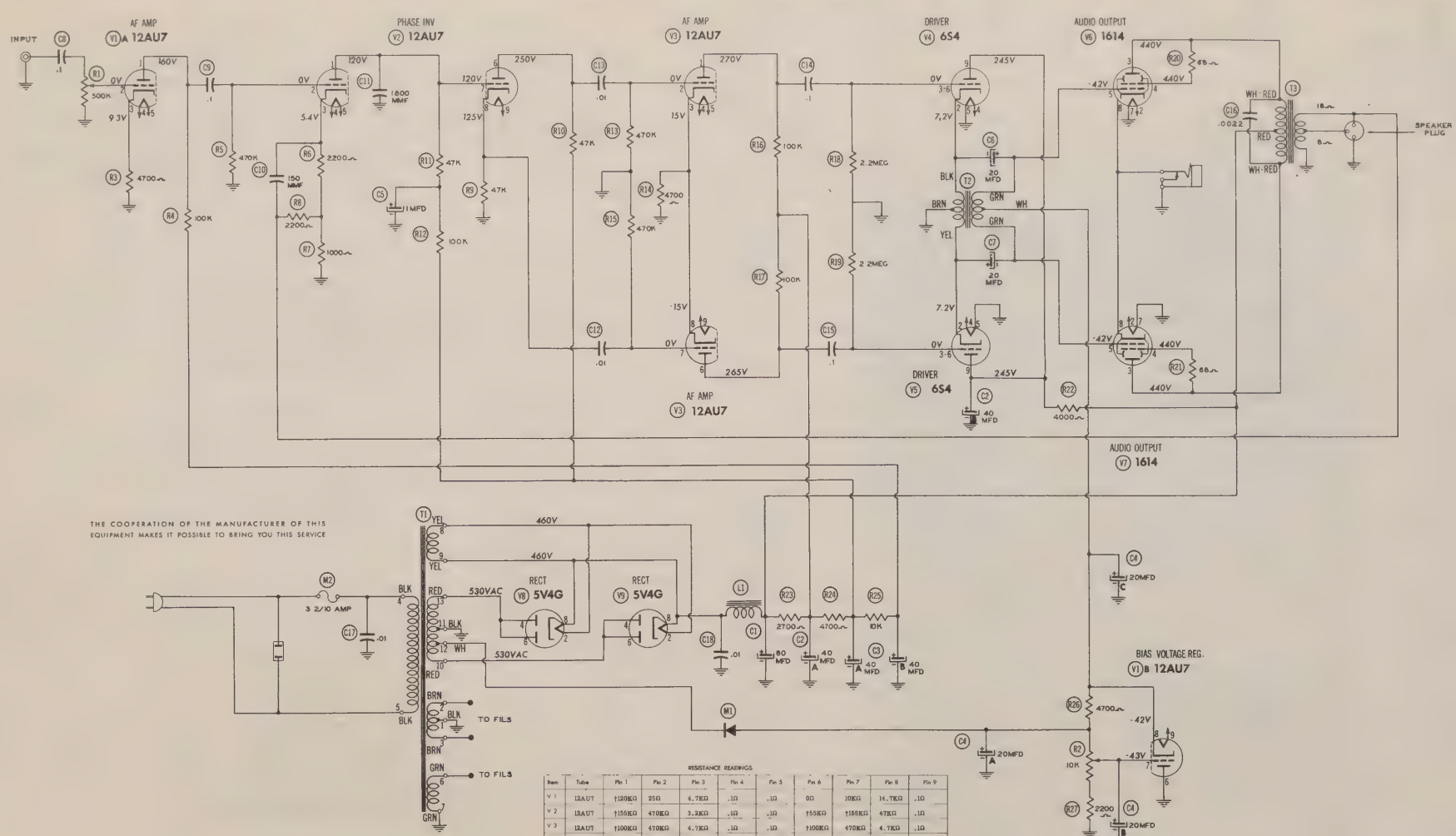
DENVER, COLORADO

FISHER MODEL 50-A



Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AU7	†120KΩ	25Ω	4.7KΩ	.1Ω	.1Ω	0Ω	10KΩ	14.7KΩ	.1Ω
V 2	12AU7	†155KΩ	470KΩ	3.3KΩ	.1Ω	.1Ω	†55KΩ	†155KΩ	47KΩ	.1Ω
V 3	12AU7	†100KΩ	470KΩ	4.7KΩ	.1Ω	.1Ω	†100KΩ	470KΩ	4.7KΩ	.1Ω
V 4	6S4	INF	315Ω	2.2Meg	.1Ω	0Ω	2.2Meg	INF	INF	†4KΩ
V 5	6S4	INF	275Ω	2.2Meg	.1Ω	0Ω	2.2Meg	INF	INF	†4KΩ
V 6	1614	0Ω	.1Ω	†108Ω	†175Ω	17KΩ	INF	0Ω	0Ω	
V 7	1614	0Ω	.1Ω	†108Ω	†175Ω	17KΩ	INF	0Ω	0Ω	
V 8	5V4G	INF	70KΩ	INF	41Ω	INF	41Ω	INF	70KΩ	
V 9	5V4G	INF	70KΩ	INF	41Ω	INF	41Ω	INF	70KΩ	

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1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a varation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

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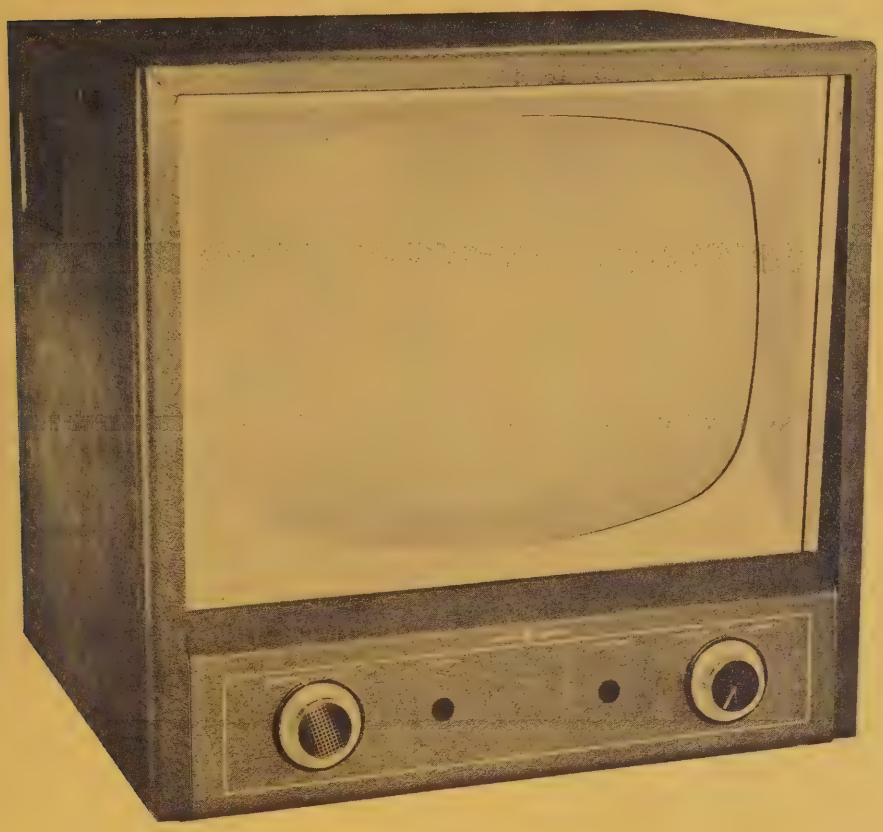

MODEL 21T14

GENERAL ELECTRIC
MODELS 21C115, 21T14 (Ch. 21TF)

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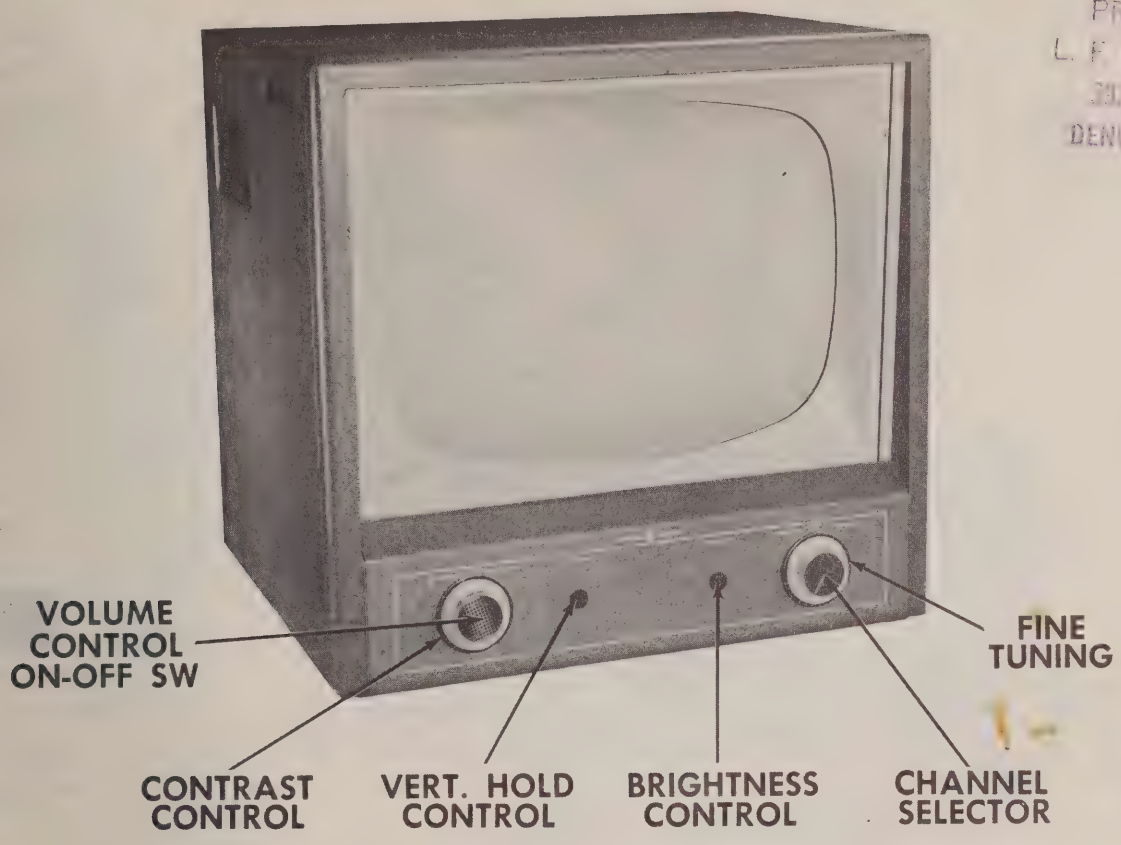

GENERAL ELECTRIC MODEL 21T14

TRADE NAME	General Electric Models 21C115, 21T14 (Ch. 21TF)
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, N. Y.
TYPE SET	Television Receiver
TUBES	Twenty-one
POWER SUPPLY	110-120 Volts AC-60 cycle RATING 1.92 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13, Video IF 45.75MC, Sound IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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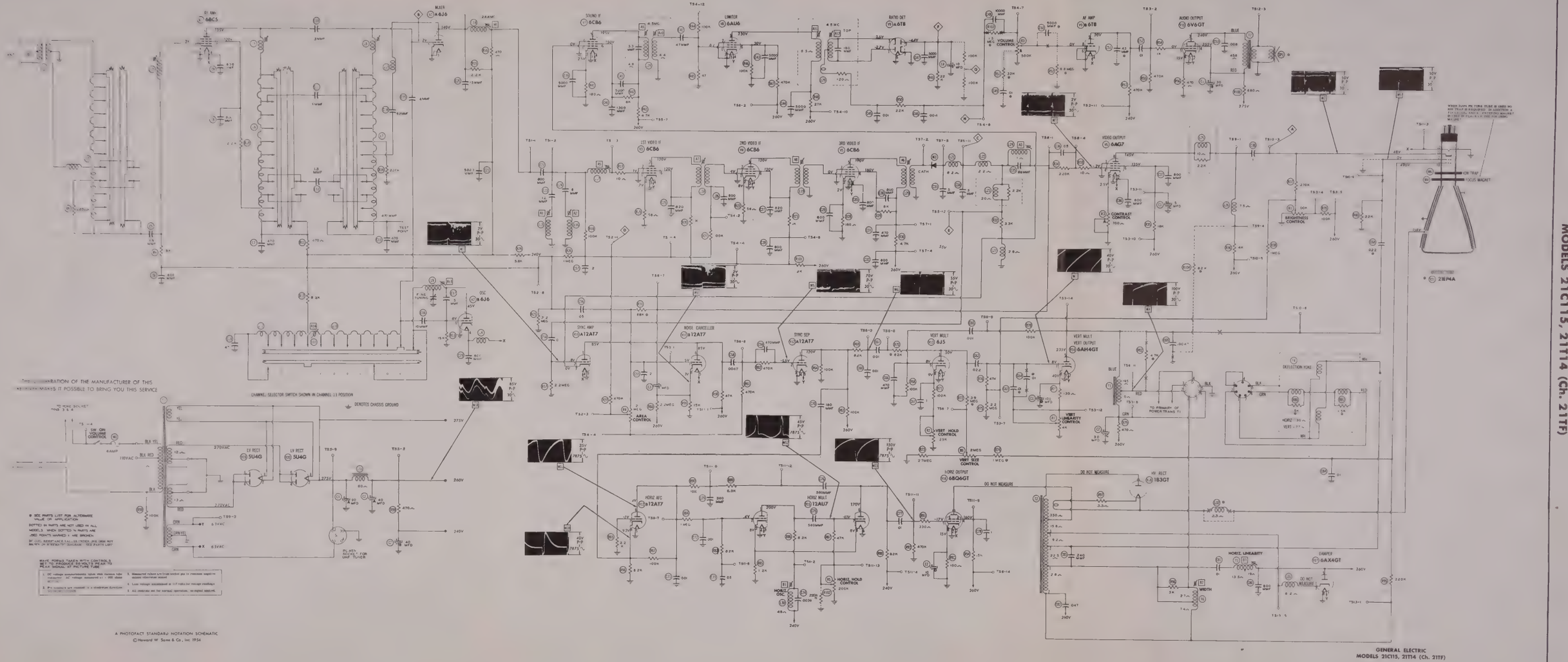
DATE 2-54 SET 229 FOLDER 7

GENERAL ELECTRIC
MODELS 21C115, 21T14 (Ch. 21TF)


MIXER A 6J6
OSC 6J6
SOUND IF 6CB6
LIMITER 6AU6
RATIO DET 6AT8
AF AMP 6T8
AUDIO OUTPUT 6V6GT
VIDEO OUTPUT 6AG7
1ST VIDEO IF 6CB6
2ND VIDEO IF 6CB6
3RD VIDEO IF 6CB6
SYNC AMP 12AT7
NOISE CANCELLER 12AT7
SYNC SEP 12AT7
VERT MULT 6J5
VERT OUTPUT 6AH4GT
HORIZ AFC 12AT7
HORIZ MULT 12AU7
HORIZ OUTPUT 6BQ6GT
HV RECT 1B3GT
LV RECT 5U4G
LV RECT 5U4G
DAMPER 6AX4GT
VOLUME CONTROL
CONTRAST CONTROL
BRIGHTNESS CONTROL
AREA CONTROL
VERT LINEARITY CONTROL
VERT HOLD CONTROL
VERT SIZE CONTROL
HORIZ HOLD CONTROL
HORIZ LINEARITY
WIDTH
DEFLECTION YOKE
CRT
ION TRAP
FOCUS MAGNET
TO PRIMARY OF POWER TRANS T1
TO VERT SYNC KEY
TO HORIZ SYNC KEY
SW ON VOLUME CONTROL
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
DENOTES CHASSIS GROUND
DO NOT MEASURE
275V
240V
260V
6.3VAC
370VAC
270VAC
130VAC
TEST POINT
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GENERAL ELECTRIC
MODELS 21C115, 21T14 (Ch. 21TF)

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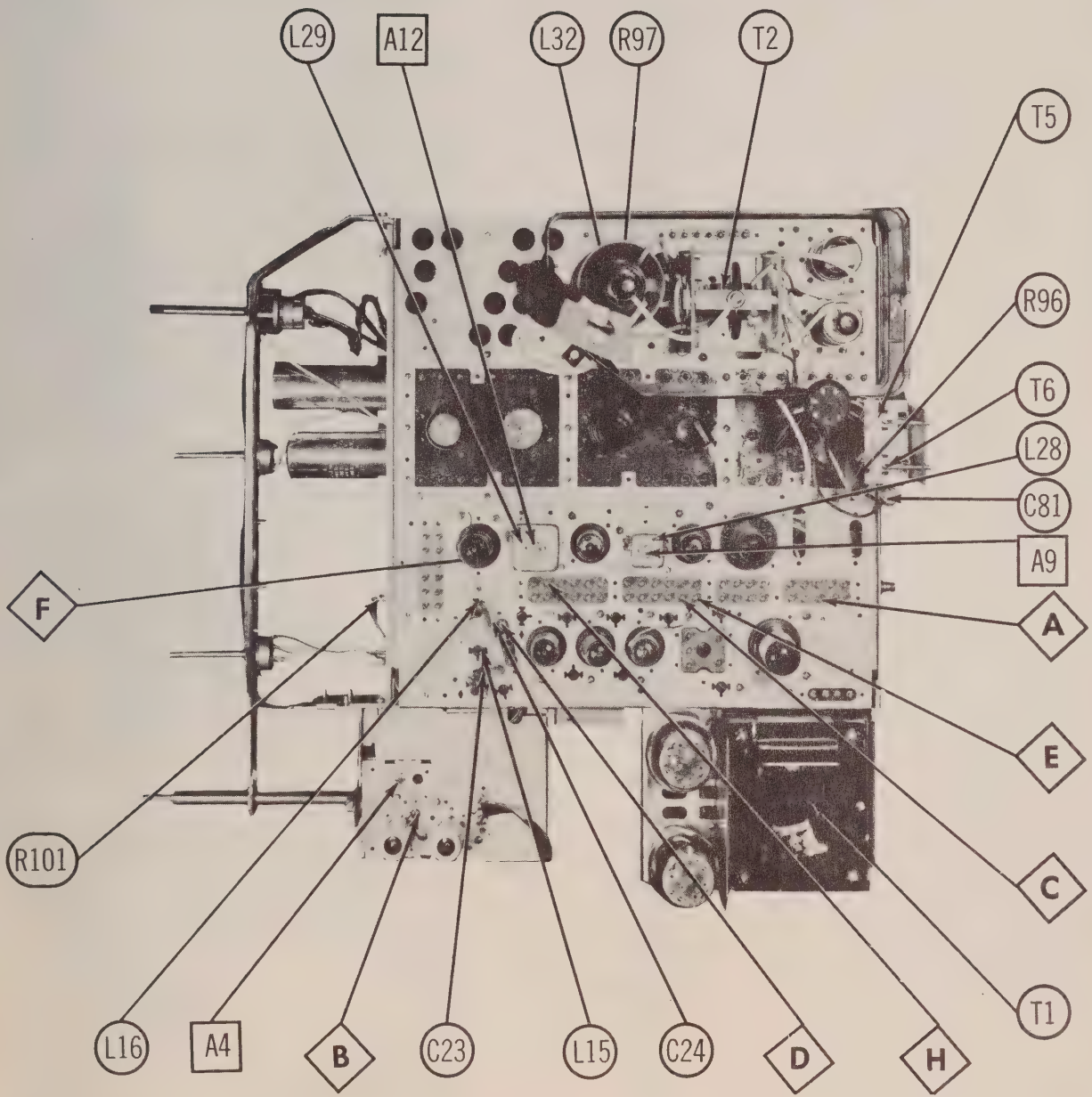

For tube location see
Tube Placement chart page 5.

CHASSIS TOP VIEW

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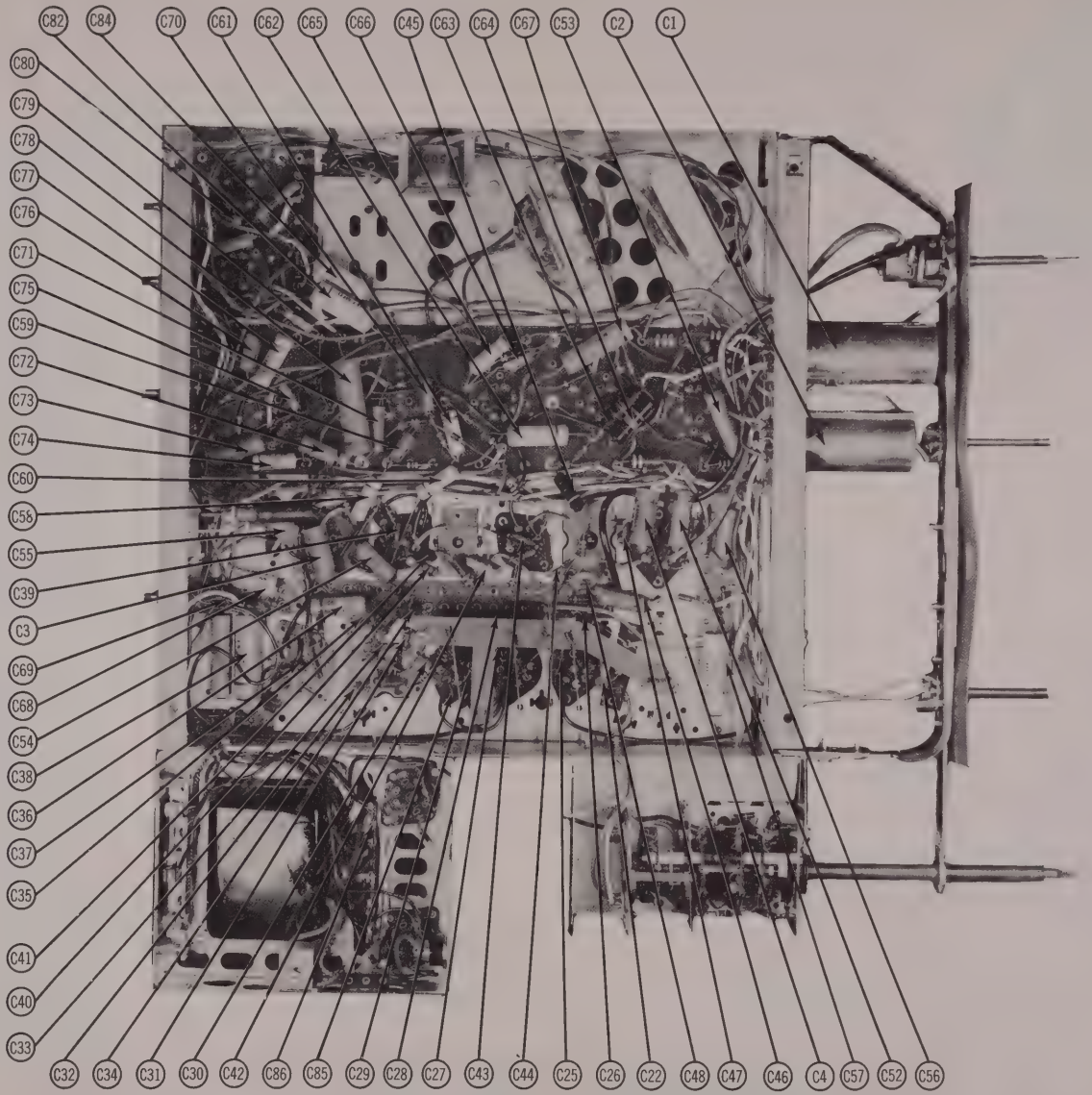

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

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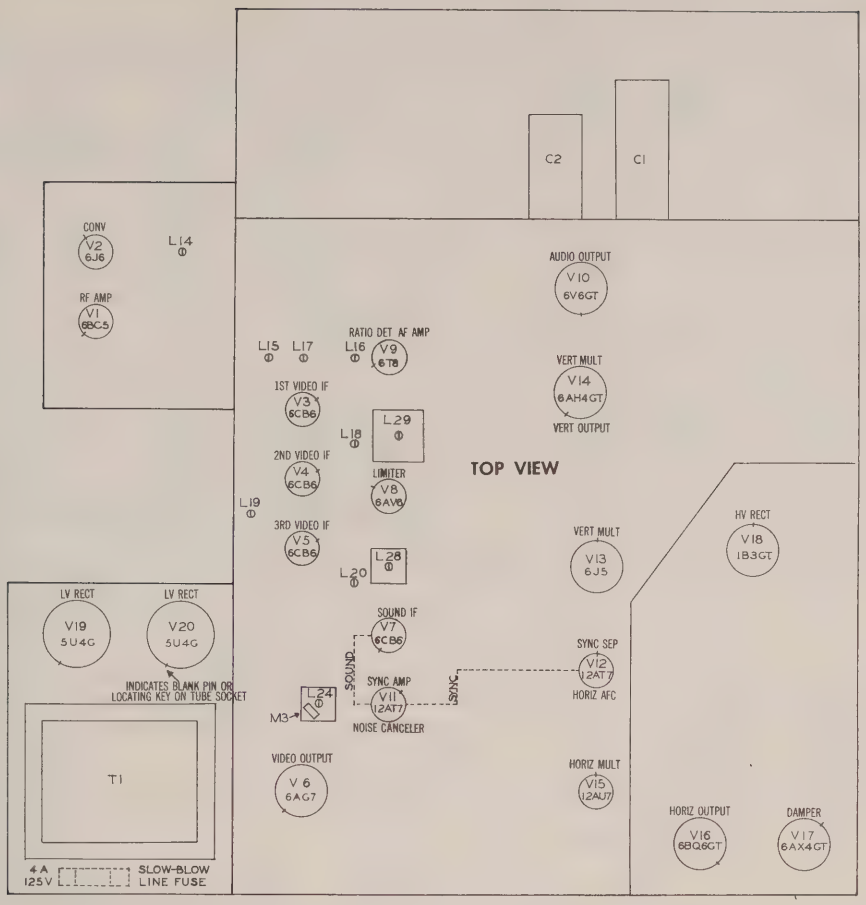
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V19, V20, Fuse (M1)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V2, V3, V4, V5**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V6, V21**
Has pic, no sound - **V7, V8, V9, V10**
Overloaded picture -

SYNC FAILURE
No vert. sync - **V12, V13, V14**
No horiz. sync - **V12, V15**
No vert. or horiz. sync - **V12**

SWEEP FAILURE
No raster, has sound - **V15, V16, V17, V18, V21**
No vertical deflection - **V13, V14**
Poor vert. linearity or foldover - **V13, V14**
Poor horiz. linearity or foldover - **V15, V16, V17**
Narrow picture - **V15, V16, V17, V18, V19, V20**
Vert. off freq. - **V12, V13, V14**
Horiz. off freq. - **V12, V15**

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal multivibrator tube from its socket.
Allow 20 minute warm-up period for receiver and test equipment.

TRAP ALIGNMENT

Turn the fine tuning control and the contrast control fully clockwise. Turn the volume control and the area control fully counter clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to point (B). Low side to chassis.	Not used	47.25MC (400∿Mod)	11	Vert. Amp. to point (A). Low side to chassis.	A1	Remove V11 and V16 from their sockets. Adjust for MINIMUM 400∿ indication on scope. If necessary, set scope gain to maximum.
2.	"	"	"	41.25MC	"	"	A2	"
3.	"	High side to point (C). Low side to chassis.	"	4.5MC (400∿Mod)	"	Vert. Amp. thru detector (Fig.1) to point (A). Low side to chassis.	A3	Adjust for MINIMUM 400∿ indication on scope.

VIDEO IF ALIGNMENT

Connect the negative lead of a 4.5 volt bias supply to point (D). Connect positive lead to chassis.
Turn contrast control fully counter clockwise.
Remove the converter tube from its socket and replace with 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	44MC (10MC Swp)	44.15MC 44.15MC 44.15MC 45.25MC 42.9MC	11	Vert. Amp. thru 10KΩ resistor to point (E). Low side to chassis.	A4, A5 A6 A7 A8	Calibrate scope so that .75 volt produces 2 inch vertical deflection. Peak A4 thru A8 for maximumum response at marker frequency.
5.	"	"	"	41.25MC 42.5MC 45.0MC 45.75MC 47.25MC	"	"		Adjust A4 thru A8 for response similar to Fig.2. If necessary, retouch A4, A5 and A6 to shape peak region of curve.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (F) to chassis. The junction of these two resistors is alignment point (G) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to pin 1 (grid) of 6CB6 (V7). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point (F). Common to chassis.	A9, A10, A11	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to point (H). Common to point (G).	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulated and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to pin 1 (grid) of 6CB6 (V7). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any non-interfering channel	Vert. Amp. thru 10KΩ to point (F). Low side to chassis.	A9, A10 A11	Disconnect stabilizer capacitor C4. Adjust for curve of maximum amplitude and symmetry as in Fig. 3.
7.	"	"	"	"	"	Vert. Amp. thru 10KΩ to point (H). Low side to chassis.	A12	Reconnect stabilizer capacitor C4. Adjust so that 4.5MC occurs at center of crossover lines as in Fig.4. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines.

SOUND IF ALIGNMENT USING TV SIGNAL AND VTVM

Replace V11 and V16.
Remove dummy oscillator tube and replace original 6J6 in its socket.
Turn the set on and tune in a TV station.
Connect the VTVM and adjust A9, A10, A11 and A12 as in steps 6 and 7 under "Sound IF alignment using AM signal generator and VTVM".

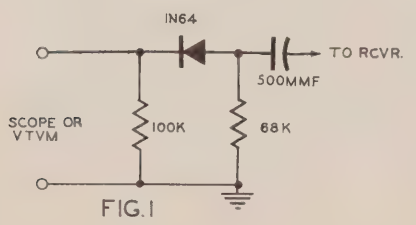


FIG.1

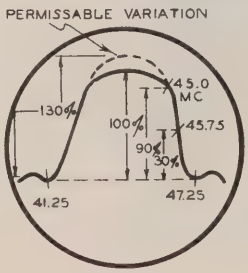


FIG.2

FIG3

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ALIGNMENT INSTRUCTIONS (cont)

OSCILLATOR ADJUSTMENT

Leave bias connected as under Video IF alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ resistor to point (E). Low side to chassis.	A13	Adjust to place sound marker in the trap notch as in Fig. 5.
			207MC (10MC Swp)	205.25MC 209.75MC	12			
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
9.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	6	"	A14	"
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

RF AND MIXER ALIGNMENT

The RF and mixer portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

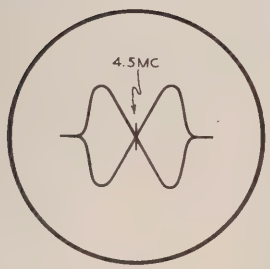


FIG.4

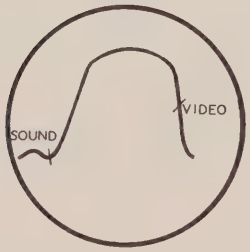
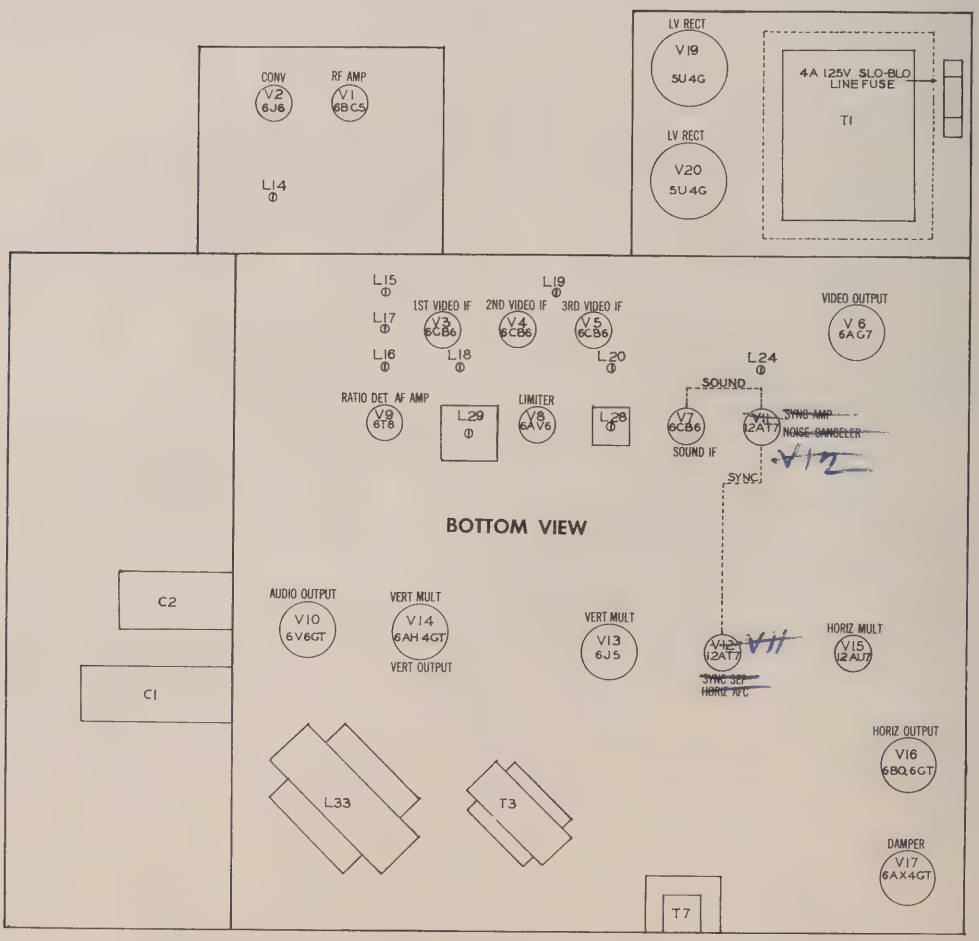


FIG.5

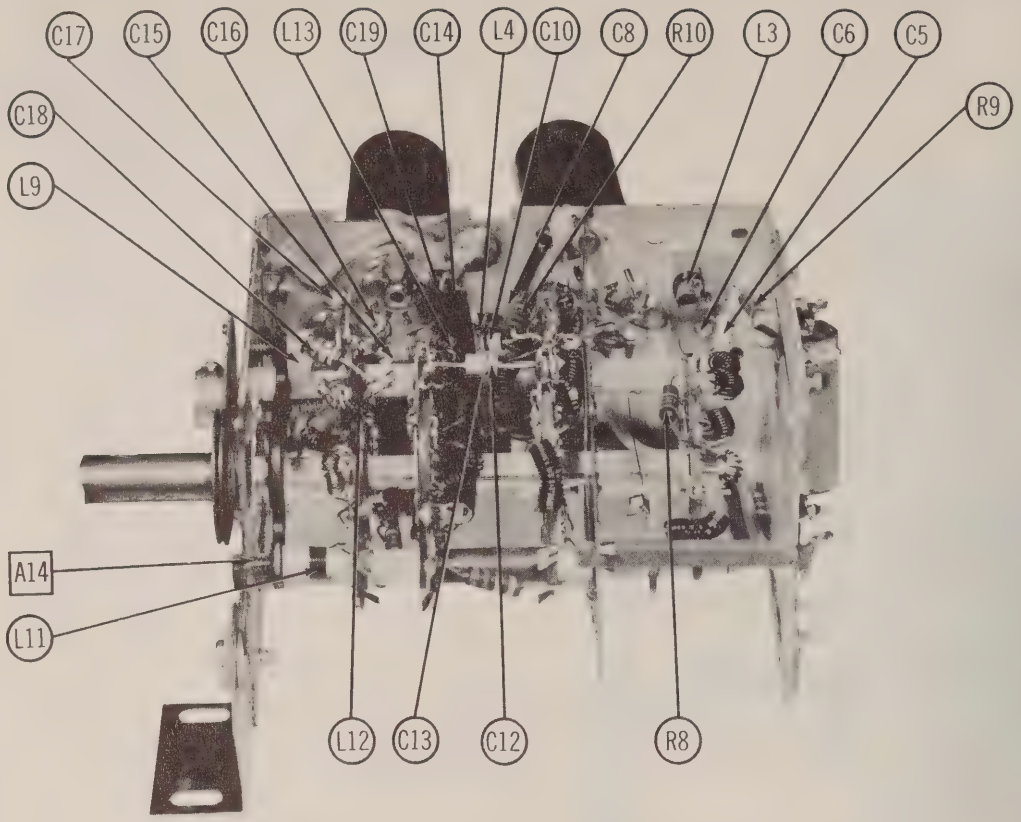
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	1. 3Meg	0Ω	0Ω	.1Ω	† 6. 7KΩ	† 8. 9KΩ	0Ω		
V 2	6J6	† 14. 3KΩ	† 6. 5KΩ	0Ω	.1Ω	220KΩ	15KΩ	0Ω		
V 3	6CB6	1. 2Meg	56Ω	0Ω	.1Ω	† 4KΩ	† 4KΩ	0Ω		
V 4	6CB6	1. 2Meg	56Ω	0Ω	.1Ω	† 4KΩ	† 4KΩ	0Ω		
V 5	6CB6	.2Ω	180Ω	0Ω	.1Ω	† 4. 7KΩ	† 22. 7KΩ	0Ω		
V 6	6AG7	0Ω	.1Ω	0Ω	220KΩ	83Ω	† 18KΩ	0Ω	† 4KΩ	
V 7	6CB6	2. 8Ω	180Ω	0Ω	.1Ω	† 4. 7KΩ	† 22. 7KΩ	0Ω		
V 8	6AU6	47KΩ	0Ω	0Ω	.1Ω	† 27 KΩ	75KΩ	0Ω		
V 9	6T8	2. 0Meg	22KΩ	2. 0Meg	.1Ω	0Ω	0Ω	0Ω	250K	† 470KΩ
V 10	6V6GT	INF	.1Ω	† 1. 1KΩ	† 680Ω	470KΩ	INF	0Ω	470Ω	
V 11	12AT7	† 47KΩ	2. 2Meg	2. 8Ω	.1Ω	.1Ω	† 47KΩ	70KΩ	15KΩ	0Ω
V 12	12AT7	† 60KΩ	3Meg	0Ω	0Ω	0Ω	180KΩ	2. 2KΩ	82KΩ	.1Ω
V 13	6J5	INF	0Ω	▲ 7Meg	INF	100KΩ	INF	.1Ω	225KΩ	
V 14	6AH4GT	2. 2Meg	0Ω	INF	100KΩ	† 730Ω	600Ω	.1Ω	600Ω	
V 15	12AU7	† 8. 7KΩ	1. 2Meg	1. 2KΩ	0Ω	0Ω	† 82KΩ	130KΩ	1. 2KΩ	.1Ω
V 16	6BQ6GT	INF	0Ω	INF	†15KΩ	470KΩ	† 500Ω	.1Ω	150Ω	TOP CAP ▲ 16Ω
V 17	6AX4GT	INF	INF	6Meg	INF	† 60Ω	INF	.1Ω	0Ω	
V 18	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								TOP CAP ▲ 366Ω
V 19	5U4G	INF	70KΩ	INF	13Ω	INF	13Ω	INF	70KΩ	
V 20	5U4G	INF	70KΩ	INF	12Ω	INF	12Ω	INF	70KΩ	
V 21	21EP4A	0Ω	22KΩ	PIN 10 ▲ 220KΩ	PIN 11 300KΩ	PIN 12 .1Ω				

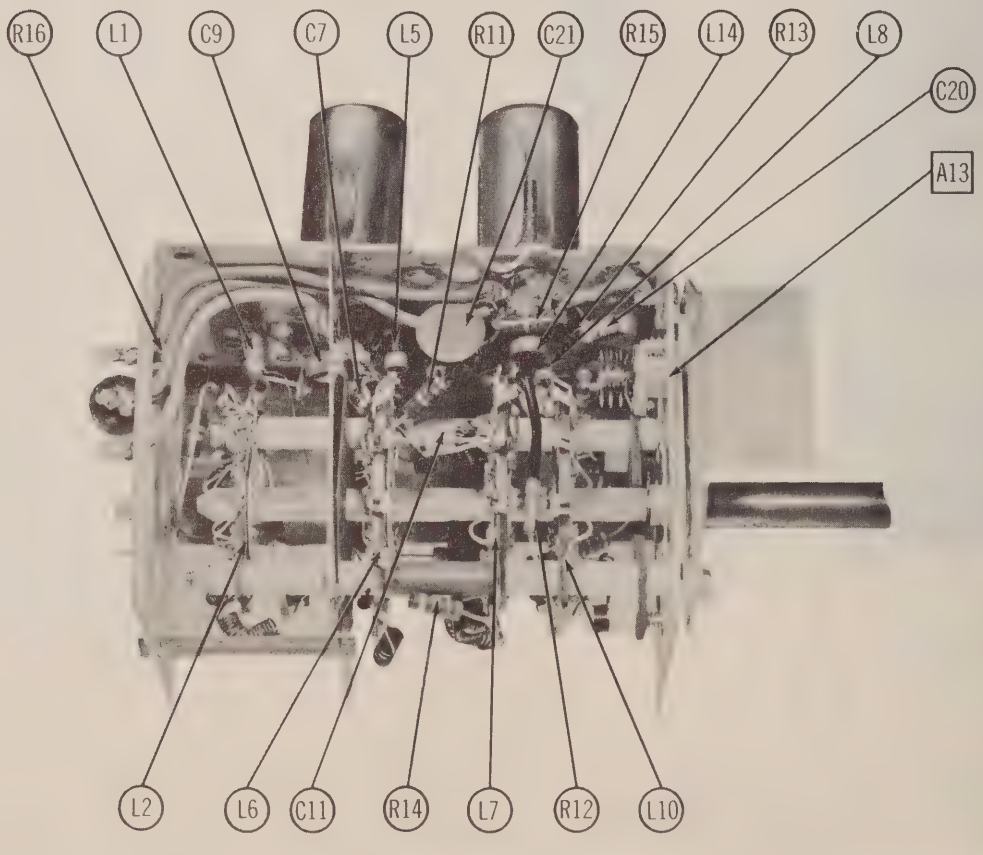
† MEASURED FROM PIN 2 OF V 20.
▲ MEASURED FROM PIN 3 OF V17.



TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

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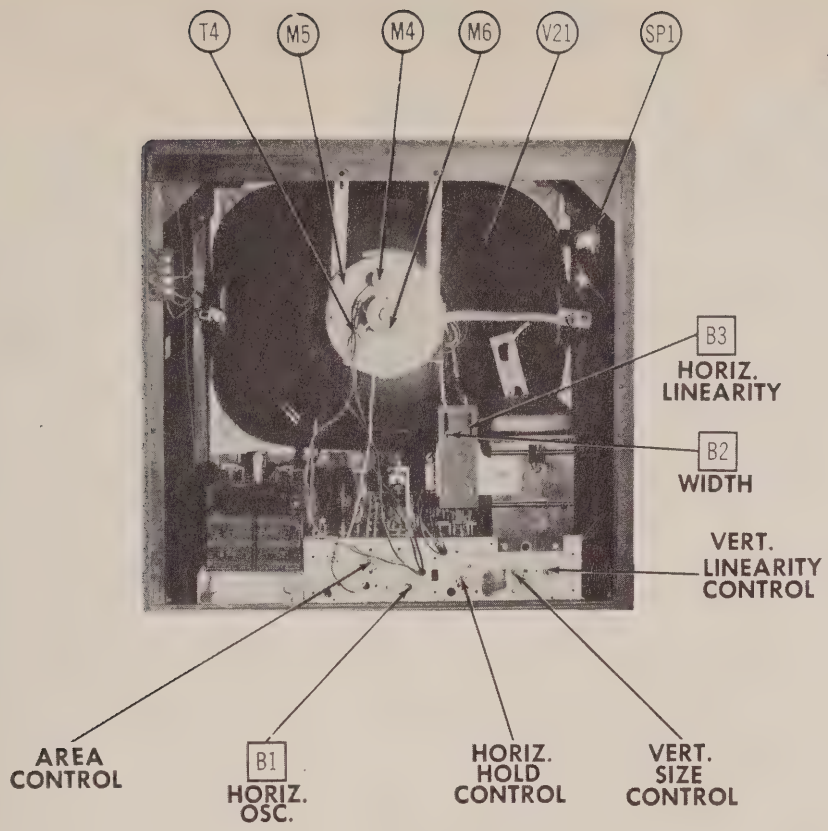

CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station preferably a test pattern.

1. Short pin 2 (grid) of 12AU7 (V15) to chassis.
2. Short-circuit terminals of horizontal oscillator coil L30.
3. Bring picture closely into sync by adjusting horizontal hold control.
4. Remove short across L30.
5. Adjust horizontal oscillator slug (B1) until picture is in sync.
6. Remove short from pin 2 of V15 to chassis.

Check for proper lock-in of horizontal sync on all available channels.

The width slug (B2) should be adjusted for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B3) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V15, V16, V17, V19 and V20. Check adjustment of B2 and B3. Check waveform W13.

If Satisfactory	If Unsatisfactory
Check C78, C81, C82, R94, R96, T2, T4A and other associated components.	Check C75, C76, C77, R85, R88, R92 and other associated components.

DRIVE LINES

Check by substitution V15, V16 and V17. Check C75, C76, C77, C78, C81, C82, T2, T4A and other associated circuit components for failure or change of value.

COMPRESSED LEFT SIDE

Check by substitution V16 and V17. Check horizontal output and damper circuit components especially T2 and T4A.

FOLDS

Follow procedure outlined under "Drive Lines".

XMAS TREE EFFECT

Substitute V15. Check C74, C75, L30 and other components associated with the horizontal oscillator stage.

VERTICAL

LOSS OF SWEEP

Check by substitution V13 and V14. Check waveform W7.

If Satisfactory	If Unsatisfactory
Check T3, T4B, R79 and other associated circuit components.	Check C62, C65, C66, R71, R75 and other associated components.

INSUFFICIENT SWEEP

Check adjustment of height and vertical linearity controls. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT TOP

Check by substitution V13 and V14. Check T3, T4B, C1D and other associated circuit components.

COMPRESSED AT BOTTOM

Check by substitution V13 and V14. Check C62, C63 and other associated circuit components.

FOLDS

Substitute V13 and V14. Check components associated with these stages for failure or change of value.

SYNC

LOSS OF HORIZONTAL AND VERTICAL SYNC

Check by substitution V11 and V12. Check C54, C58, C3 and other components associated with V11 and V12.

LOSS OF VERTICAL SYNC - HORIZONTAL SYNC SATISFACTORY

Check by substitution V11, V12 , V13. Check waveform at W6.

If Satisfactory	If Unsatisfactory
Check components associated with V13.	Check C60, R69 and other components associated with V11 and V12.

LOSS OF HORIZONTAL SYNC - VERTICAL SYNC SATISFACTORY

Check by substitution V12 and V15. Check components associated with V12B and V15 especially C74 and C75.

HORIZONTAL BENDING

Check by substitution V12, V15 and V16. Check circuit of V12, V15 and V16 for filament lead dress short. Check horizontal AFC filter network for component failure or change of value.

VIDEO

LOSS OF VIDEO

Substitute V6. Check associated components including picture tube.

SOUND BARS (4.5MC Beat)

Check fine tuning adjustment. Check 4.5MC trap adjustment (A3). Check video IF alignment.

POOR CONTRAST

Substitute V6. Check video detector crystal and assembly. Check components associated with these stages. Check picture tube.

NEGATIVE PIX

Substitute V6 and V11. Check video detector crystal and assembly. Check picture tube. Check adjustment of the "Area Control". Check AGC network.

SMEAR

Check by substitution V6. Check video detector crystal and assembly. Check C36, C38, L25, R35, R36, R37, R1, R3A, picture tube and other associated circuit components.

WIDE BLACK BAR ACROSS PIX

Check V1, V2, V3, V4, V5 and V6 for heater to cathode leakage. Check B+ filter capacitors for open.

AUDIO

WEAK OR NO SOUND

Check by substitution V7, V8, V9 and V10. Check stages of V9B and V10 using an audio signal generator. Apply audio signal across R52 or R3B.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alignment and components.	Check components associated with V9B and V10.

BUZZ

Adjust A12 for minimum buzz. If buzz is still objectionable substitute V9 and readjust A11 and A12. Follow procedure outlined in the alignment section.

DISTORTED

Check by substitution V7, V8, V9 and V10. Follow procedure outlined under "Weak or No Sound".

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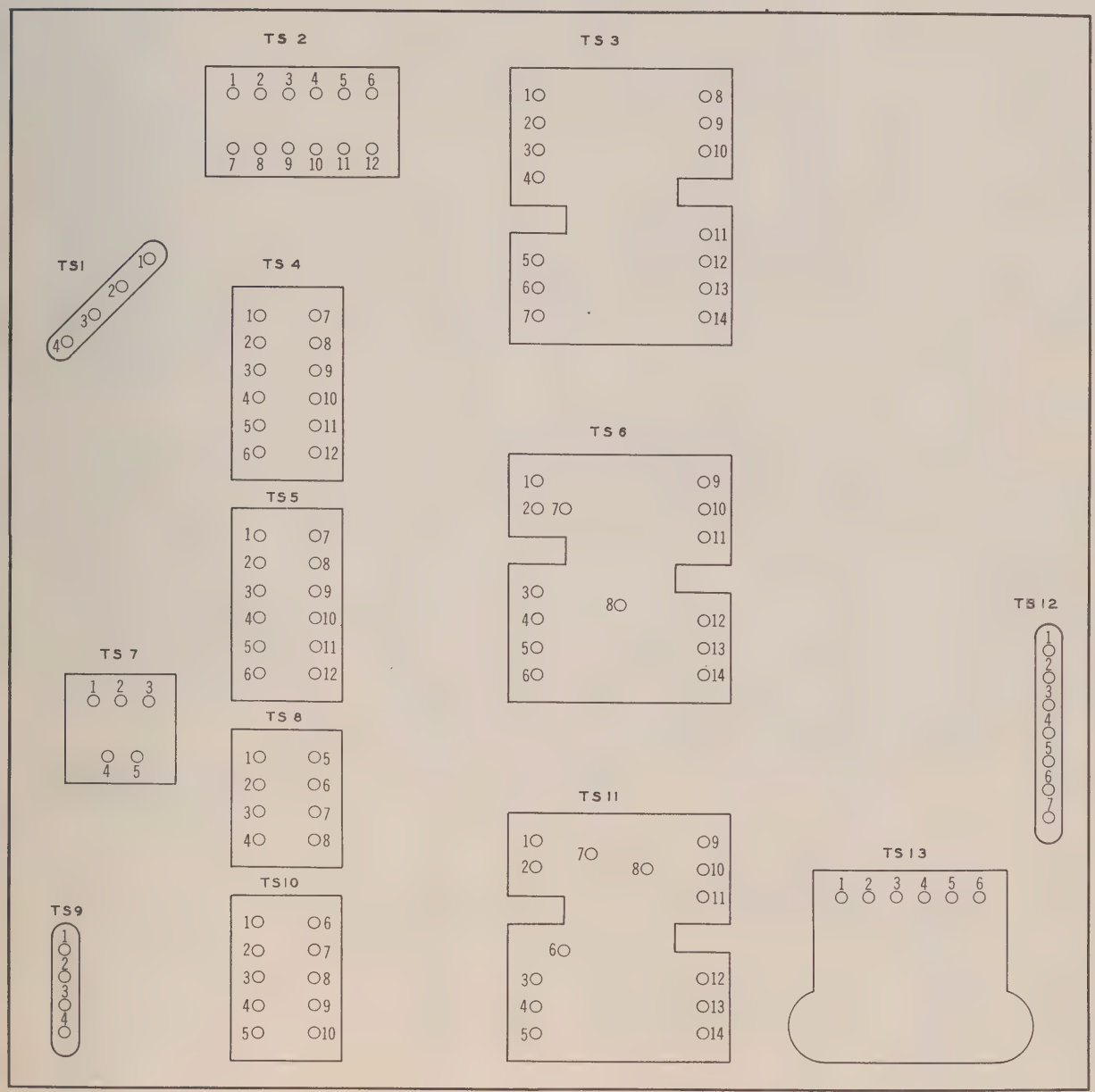

TERMINAL LOCATION CHART

SET 229 FOLDER 7

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No	USE	REPLACEMENT DATA: General Electric Part No	STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	6BC5	6CB5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	6AG7	6AG7	8Y	
V7	Sound IF Amp.	6CB6	6CB6	7CM	
V8	Limiter	6AU6	6AU6	7BK	
V9	Ratio Detector -- AF Amplifier	6T8	6T8	9K	
V10	Audio Output	6V6GT	6V6GT	7S	
V11	Sync Amplifier-Noise Canceller	12AT7	12AT7	9A	
V12	Sync Sep. - Horiz. AFC	12AT7	12AT7	9A	
V13	Vert. Mult.	6J5	6J5	6Q	
V14	Vert. Mult.- Vert. Output	6AH6GT	6AH6GT	8KL	
V15	Horiz. Mult.	12AU7	12AU7	9A	
V16	Horiz. Output	6BQ6GT	6BQ6GT	8AM	
V17	Damper	6AX4GT	6AX4GT	6CG	
V18	HV Rectifier	1B3GT	1B3GT	8C	
V19	LV Rectifier	5U4G	5U4G	5T	
V20	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: General Electric Part No	SYLVANIA PART No	GENERAL ELECTRIC PART No	WESTINGHOUSE PART No	RETMA BASE TYPE	NOTES
V21A	21EP4A	21EP4A 21EP4 ① 21EP4B 21FP4 ① 21FP4A ①	21EP4A 21EP4 ①		12D 12D 12D 12C 12C	① Circuit changes necessary
B	21JP4		21JP4		12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: General Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	⌀90	350	RCE-153	E4D645					TVL-4825	
B	⌀90	350								
C	⌀5	350								
D	100	75								
C2A	⌀40	350								
B	⌀40	350	RCE-181	AFH4-52		DO43		FP419.3	TVL-4822	
C	⌀30	350								
D	10	25								
C3	1	50	RCE-090	PRS150/4		BBR-1-50T		TC31		
C4	10	25	RCE-164	PRS25/10		BR-102A		TC22	TVA-1204	
C5	15			SI15	D6-150		GP1K-150	UC-5415	5GA-Q15	
C6	600		RCW-3037	BPD-0008	DD-801	TM5T8			5GA-T8	
C7	470			SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C8	800		RCW-3037	BPD-0008	DD-801	TM5T8			5GA-T8	
C9	800		RCW-3037	BPD-0008	DD-801	TM5T8			5GA-T8	
C10	.3									
C11	.5									
C12	1.5			SI1.5NP0	TC2-1.5		NP0K-1R5		5TCCB-V15	
C13	470			SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C14	68									
C15	.4									
C16	10			SI10N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C17	1.8									
C18	.47									
C19	800		RCW-3037	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C20	15			SI15	D6-150		GP1K-150	UC-5415	5GA-Q15	
C21	5000		RCW-3014	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C22	800		RCW-3037	BPD-0008	D8-801	TM5T8			5GA-T8	
C23	12	500		SI12	D6-120		GP1K-120	UC-5412	5GA-Q12	
C24	8	500	RCN-040							
C25	820		RCW-3052		D6-821				5GA-T82	
C26	800		RCW-3037	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C27	820		RCW-3052		D6-821				5GA-T82	
C28	800		RCW-3037	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C29	800		RCW-3037	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C30	800		RCW-3037	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C31	470		RCW-3097	SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C32	800		RCW-3037	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C33	5		RCW-3067							
C34	5		RCW-3067							
C35	68	500	UCG-2024	1469-00007		SR5Q7			MB-47	
C36	.05	200	UCC-045	P288-05	DF-503	PTE4S5		PT415	2TM-S5	
C37	800		RCW-3037	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C38	.1	600	UCC-047	P288-1	DF-104	PTE6P1		PT601	6TM-P1	
C39	5000		RCW-3014	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C40	1300		RCW-3053	SI1300	D6-132		GP2L-132		5GA-D13	
C41	5000		RCW-3014	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C42	47	500	UCW-520	SI47	D6-470	SR5Q5	GP1K-470	UC-5447	5GA-Q47	
C43	5000		RCW-3014	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C44	5000		RCW-3014	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C45	.001	400	RCC-035	P488-001	D6-102	PTE4D1	GP2L-102	PT421	4TM-D1	
C46	.004	500	RCC-038	P488-004	D6-402	PTE4D4	GP2-333-402	PT424	4TM-D4	
C47	5000		RCW-3014	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C48	10000		RCW-3064	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C49	.01			P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	Note 1
C50	5000		RCW-3014	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	Note 4
C51	43		UCG-1019							Note 4
C52	.01	600	UCC-040	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C53	.008	1000	UCC-081	P1088-008		PTE16D8		PT1628	MB-D8	

CAPACITORS (cont)

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: General Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C54	.01	200	UCC-040	P488-01	D6-103	PTE4S1	GP2-333-103	† T4 81	4TM-S1	
C55	.2	200	UCC-051	P288-2		PTE4P2		PT402	2TM-P2	
C56	.05	200	UCC-045	P288-05	DF-503	PTE4S5		PT415	2TM-S5	
C57	.2	200	UCC-051	P288-2		PTE4P2		PT402	2TM-P2	
C58	.0047	600	RCN-051	P688-0047	D6-472	PTE6D47	GP2-333-472	PT4247	4TM-D47	
C59	470	500	UCU-544	SI470	D6-471	5R5T5	GP2K-471	UC-5347	5GA-T47	
C60	.001	600	RCN-062							Note 2
C61	.001	600	RCN-062							
C62	.022	600	RCN-060	P688-022		PTE6S22		PT6222	6TM-S22	
C63	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	Note 3
C64	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	Note 3
C65	.001	600	RCN-071	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C66	470	500	UCU-544	1469-0005		5R5T5		MCB2465	MB-35	
C67	.1	200	UCC-047	P288-1	DF-104	PTE4P1		PT401	2TM-P1	
C68	.022	600	RCN-060	P688-022		PTE6S22		PT6122	6TM-S22	Note 4
C69	.0047	600	RCN-051	P688-0047	D8-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C70	180	500	RCU-307							
C71	.001	600	UCC-035	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C72	.001	200	UCC-035	P688-001	D6-103	PTE6D1	GP2L-102	PT621	6TM-D1	
C73	.05	200	UCC-047	P288-05	DF-503	PTE4S5		PT496	2TM-S5	
C74	.0033	600	RCN-054	1464-004		LDE5D4		MCB3463	MB-34	
C75	560	500	UCU-1046							
C76	560	500	UCU-1046							
C77	.01	600	RCN-063	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C78	.1	600	UCC-048	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C79	560	500	UCU-1046						5GA-T8	
C80	800		RCW-3037	BPD-0008	DD-801	TM5T8				
C81	.01	600	RCN-025							
C82	.047	600	RCN-041							
C83	240	3000	RCW-3101							
C84	.01	1000	RCN-030	P1088-01		PTE16S1		PT611	MB-S1	
C85	800		RCW-3037	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C86	800		RCW-3037	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	

Note 1. Capacitor used on console models only.
Note 2. Some Models may use a 560MMF in this application.
Note 3. In some Models C63 is .022MFD and C64 is not used
Note 4. Not used in all Models.

CONTROLS

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: General Electric PART No	IRC PART No	CLAROSTAT PART No	CENTRALAB PART No	MALLORY PART No.	INSTALLATION NOTES
R1A	100KΩ	½	RRC-191	QU-128	AG-49-S	AB-40	U-41	Brightness
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
R2A	125KΩ	½	RRC-193	QU-228	AG-49-S		U-415	Vert. Hold
B	Shaft		Not Req.	Not Req.	KSS-3		Not Req.	Attach to R2A
R3A	700Ω	2	RRC-233	*QJ-508	RTV-439		WF751	Contrast - Panel
B	500KΩ	½	Not Req.				UR55A	Volume - Rear
C	Switch		Not Req.				US-26	Attach to R3B
R4A	2Meg	½	RRC-225	QU-139	AG-83-S	AB-75	U-56	Area
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R4A
R5A	200KΩ	½	RRC-219	QU-129	AG-52-S	AB-46	U-43	Horiz. Hold
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	2Meg	1	RRC-225	QU-139	AG 83-S	AB-75	U-56	Vert. Size
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	40000	2	RRC-218	W-4000	VK-434	R5000L	Vert. Linearity	
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R7A

† Universal replacement (Mallory exact duplicate part # UK24WS)
* CONCENTRIKIT EQUIVALENT KIT - K-3 BASE ELEMENTS & SHAFTS W17-105 & P3-210 (Panel)
B13-133 & R7-309 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: General Electric PART No.	IRC PART No.	NOTES
R8	2200Ω	½		BTS-2200	
R9	15KΩ	½		BTS-15K	
R10	2200Ω	½		BTS-2200	
R11	470Ω	½		BTS-470	Note 2
R12	8200Ω	½		BTS-8200	Note 3
R13	15KΩ	½		BTS-15K	
R14	220KΩ	½		BTS-220K	
R15	2200Ω	½		BTS-2200	
R16	470Ω	½		BTS-470	
R17	10Ω	1	URD-001	BTS-10	
R18	100KΩ	½	URD-097	BTS-100K	
R19	56Ω	½	URD-019	BTS-56	
R20	1000Ω	½	URD-049	BTS-1000	
R21	100KΩ	½	URD-097	BTS-100K	
R22	56Ω	½	URD-019	BTS-56	
R23	1000Ω	½	URD-049	BTS-1000	
R24	5600Ω	5	RRW-079		
R25	2.2Meg	½	URD-129	BTS-2.2Meg	
R26	1Meg	½	URD-121	BTS-1Meg	
R27	470KΩ	½	URD-113	BTS-470K	
R28	180Ω	½	URD-031	BTS-180	
R29	18KΩ	½	URD-079	BTS-18K	
R30	4700Ω	1	URE-065	BTA-4700	
R31	68KΩ	½		BTS-68K	Note 1
R32	3300Ω	1	URD-081	BTS-3300	
R33	10Ω	½	URD-001	BTS-10	
R34	220KΩ	½	URD-105	BTS-220K	
R35	18KΩ	2	URF-079	BTB-18K	
R36	4000Ω	10	RRW-053	1 3/4A-4000	
R37	270KΩ	½	URD-107	BTS-270K	
R38	1Meg	½	URD-121	BTS-1Meg	
R39	100KΩ	½	URD-097	BTS-100K	
R40	22KΩ	½	URD-081	BTS-22K	
R41	180Ω	½	URD-031	BTS-180	
R42	18KΩ	½	URD-079	BTS-18K	
R43	4700Ω	1	URE-065	BTA-4700	
R44	100KΩ	½	URD-097	BTS-100K	
R45	47KΩ	½	URD-089	BTS-47K	
R46	100KΩ	½	URD-097	BTS-100K	
R47	470KΩ	½	URD-113	BTS-470K	

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: General Electric PART No.	IRC PART No.	NOTES
R48	27KΩ	½	URD-083	BTS-27K	
R49	22KΩ	½	URD-081	BTS-22K	
R50	22KΩ	½	URD-081	BTS-22K	
R51	33KΩ	½		BTS-33K	
R52	6.8Meg	½		BTS-6.8Meg	Note 3
R53	470KΩ	½	URD-113	BTS-470K	
R54	1000Ω	½	URD-049	BTS-1000	
R55	470KΩ	½	URD-113	BTS-470K	
R56	470Ω	2	URF-041	BTB-470	
R57	2.2Meg	½	URD-129	BTS-2.2Meg	
R58	68KΩ	½	URD-089	BTS-47K	
R59	15KΩ	½	URD-077	BTS-15K	
R60	2.2Meg	½	URD-129	BTS-2.2Meg	
R61	470KΩ	½	URD-113	BTS-470K	
R62	470KΩ	½	URD-113	BTS-470K	
R63	100KΩ	½	URD-097	BTS-100K	
R64	100KΩ	½	URD-097	BTS-100K	
R65	2200Ω	½	URD-057	BTS-2200	
R66	82KΩ	½	URD-095	BTS-82K	
R67	100KΩ	½	URD-097	BTS-100K	
R68	100KΩ	½	URD-097	BTS-100K	
R69	82KΩ	½	URD-095	BTS-82K	
R70	82KΩ	½	URD-095	BTS-82K	Note 1
R71	100KΩ	½	URD-097	BTS-100K	
R72	3.9Meg	½		BTS-3.9Meg	Note 5
R73	2.7Meg	½	URD-131	BTS-2.7Meg	
R74	1Meg	½	URD-121	BTS-1Meg	Note 6
R75	2.2Meg	½	URD-129	BTS-2.2Meg	
R76	47KΩ	½	URD-089	BTS-47K	
R77	330Ω	½	URD-037	BTS-330	
R78	100KΩ	½	URD-097	BTS-100K	
R79	470Ω	1	URE-041	BTA-470	
R80	1500Ω	½		BTS-1500	Note 7
R81	1500Ω	½		BTS-1500	Note 7
R82	4700Ω	½		BTS-4700	
R83	82KΩ	½	URD-095	BTS-82K	
R84	1Meg	½	URD-121	BTS-1Meg	
R85	1200Ω	½	URD-051	BTS-1200	
R86	8200Ω	½	URD-071	BTS-8200	
R87	47KΩ	½	URD-089	BTS-47K	

RESISTORS (cont)

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: General Electric PART No	IRC PART No.	NOTES
R88	82KΩ	½	URD-095	BTS-82K	
R89	6800Ω	½	URD-069	BTS-6800	
R90	10KΩ	½	URD-073	BTS-10K	
R91	330Ω	½	URD-037	BTS-330	
R92	470KΩ	½	URD-113	BTS- 470K	
R93	150Ω	2	URF-029		
R94	15KΩ 5%	2	URF-10 77	BTB-15K 5%	
R95	220KΩ	½	URD-105	BTS-220K	
R96	5000Ω	8	RRW-106	1 3/4A-5000	

ITEM No	RATING: OHMS	WATT	REPLACEMENT DATA: General Electric PART No	IRC PART No.	NOTES
R97	3.3Ω	1	RRW-105		
R98	100KΩ	1	URE-097	BTA-100K	
R99	470Ω	2	URF-041	BTB-470	
R100	680Ω	2	URF-045	BTB-680	
R101	3000Ω	7.5	RRW-095		
R102	220KΩ	½		BTS-220K	Note 8
R103	1.5Meg	½		BTS-1.5Meg	Note 3
R104	82KΩ	½		BTS-82K	Note 3

Note 1. Some models may use a 33KΩ resistor in this application.
Note 2. Used in console models only.
Note 3. Not used in all models.
Note 4. Some models may use a 150KΩ resistor in this application.
Note 5. Some models may use a 4.7Meg resistor in this application.
Note 6. Some models may use a 1.5Meg resistor in this application.
Note 7. Some models may use a 2200Ω resistor in this application.
Note 8. This resistor is not used in all models and may be removed to extend range of sync control.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: General Electric PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC ②1.82A	530VCT ③.300A	5VAC ④6A	12.6VCT ④4.7A ⑤	RTP-315 ①	P-8167 ②⑤				

① This trans. has taps on HV secondary not being used. Also, 110V tap on primary.
② Drill new mounting holes.
③ Connect 5.3 V windings in series for Sec. 3.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	SEC.	REPLACEMENT DATA: General Electric PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	400.3Ω tap ② 2.8Ω, 35.3Ω, 44.5Ω, 80.3Ω	0Ω	RTO-141			TFB-13 ①	D-19 ①		Horiz. Output Trans.
T3	305Ω tap ④ 10.1Ω		RTO-142			TSO-14 ①			Vert. Output Trans.
T4A	30Ω		RLD-052						Horiz. Deflection Coils
B	77Ω								Vert. Deflection Coils
T5	32.5Ω tap ⑤ 13.4Ω		RLD-057	WC-5 ③④ ④	MWC-13 ③ ④	TWL-1	WC-12 ③④		Horiz. Linearity
T6	10.1Ω tap ④ 2.7Ω		RLD-058						Width

① Connect terminal #8 to terminal #7, then connect original #3 to new #9, original #5 to new #6 & #7, original #2 to new #5, original #1 to new #3, original #7 to new #4.
② Drill one new mounting hole.
③ Connect to coded red and bule terminals.
④ Bend clip or use original slider and core.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	SEC.	DC RES PRI.	SEC.	REPLACEMENT DATA: General Electric PART No.	STANCOR PART No.	MERIT PART No	CHICAGO PART No.	TRIAD PART No.	NOTES
T7	5.1KΩ	3.7Ω	456Ω	.63Ω	RTO-139 RTO-140 ②	A-3877	A-2930	RO-9 ①	S-3X	① Drill one new mtg. hole. ② Audio output transformer used in model 21C11-5.

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V. C. IMP	REPLACEMENT DATA: General Electric PART No	VIKING PART No	QUAM PART No.	NOTES
SP1A	5 1/4"	PM	3.7Ω	S527-D7		52A1	① Alternate 10" PM speaker.
B	10"	PM	3.7Ω	S1012-D7 ①	10J11	10A31	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA General Electric PART No.	REPLACEMENT DATA MEISSNER PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA MILLER PART No.	NOTES
L1	Ant. Trans.	0Ω CT	0Ω					Low Channel Secondary -0Ω
L2	Ant. Coils	0Ω						
L3	Ant. Coil	0Ω						Channel 13
L4	Fil. Choke	0Ω						
L5	RF Coil	0Ω						Channel 13
L6	RF Coils	0Ω						
L7	Mixer Grid Coils	0Ω						
L8	Mixer Grid Coil	0Ω						Channel 13
L9	Osc. Plate Coil	0Ω CT						Channel 13
L10	Osc. Coils	0Ω						
L11	Osc. Coil	0Ω						Channel 6
L12	Osc. Coil	0Ω						Channel 2
L13	Feedback Coil	1.1Ω						
L14	Conv. Plate	.1Ω						
L15	47.25MC Trap	0Ω		RLI-204				GE part no. includes C23
L16	41.25MC Trap	0Ω		RLI-206				GE part no. includes C24
L17	1st. Video IF	.1Ω		RLI-192				
L18	2nd. Video IF	.1Ω	.1Ω	RTL-144	17-4522		6219	
L19	3rd. Video IF	.1Ω	.1Ω	RTL-144	17-4523		6219	
L20	4th. Video IF	.1Ω	.1Ω	RLX-042	17-4523		6219	
L21	Series Peaking Coil	8.2Ω		RLI-138			4612	10 Microhenries, IRC part #CL-1
L22	Series Peaking Coil	2.2Ω		RLF-024	19-3036	TV-180	6176	31 Microhenries
L23	Shunt Peaking Coil	20Ω		RLI-216			4664 *	1.3 Millihenries, wound on 2.2KΩ resistor
L24	4.5MC Trap	1.1Ω		RLI-215	20-1004	TV-151	1470	GE part no. includes L21, L22, L23 & C35
L25	Series Peaking Coil	10Ω		RLI-208	19-3300 †	TV-185 †	6155 †	300 Microhenries, wound on 22KΩ resistor
L26	Shunt Peaking Coil	7.5Ω		RLI-209	19-3250	TV-185	6181	270 Microhenries
L27	Cathode Choke	2.8Ω		RLI-214	19-3036	TV-180	4628	47 Microhenries
L28	Sound IF	4.8Ω	4.4Ω	RTL-180	17-1021	TV-108 ■	1466 ■	
L29	Ratio Det.	8.5Ω	.6ΩCT	RID-014	17-3493 ▲	TV-115 ▲	1498 ▲ 1	Includes 120Ω resistor
L30	Horiz. Osc.	48Ω		RLI-210	19-1576	TV-163	6210	
L31	RF Choke	8.2Ω		RLI-138			4612	10 Microhenries IRC part #CL-1
L32	RF Choke	2.3Ω			19-3036	TV-180	6176	30 Microhenries Not used in all Models

■ Parallel with 2.2KΩ resistor.
† Parallel with 22KΩ resistor.
■ Drill one new mtg. hole.
▲ Add 120Ω resistor externally.
▲ Add 120Ω resistor externally and use adaptor plate.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA General Electric PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	REPLACEMENT DATA TRIAD PART No.
L33	.260ADC	60Ω	1.62HY	RLF-062	C-2326 ①	C- 2996 ①	TR-1733 ①	C-23X

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA General Electric PART No. FUSE	General Electric PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG S/B	4A	REF-010	RJB-027	313004	350038	MDX4	

MISCELLANEOUS

ITEM No.	PART NAME	General Electric PART No.	NOTES
M2A	RF Tuner	RJX-052	Model 21T14
B	RF Tuner	RJX-053	Model 21C115
M3	Crystal	RED-003	Video Detector
M4A	Focus magnet	RLF-058	Includes centering arm and focus adj. funnel (PM)
B	Focus unit	REA-006	Shunt assembly used with 21JP4
M5	Centering magnet	REA-007	Used with 21JP4
M6	Ion trap	RET-013	Used with 21EP4A
	Cabinet	RAV-216	Brown leatherette model 21T14
	Cabinet	RAV-223	Mahogany-model 21C115
	Knob	RDK-286	Chan. sel. model 21T14
	Knob	RDK-287	Fine tuning model 21T14
	Knob	RDK-288	Off-on volume model 21T14
	Knob	RDK-289	Contrast model 21T14
	Knob	RDK-290	(2) vert. hold-brightness model 21T14
	Knob	RDK-239	Area control model 21C115
	Knob	RDK-336	Contrast model 21C115
	Knob	RDK-337	Off-on volume model 21C115
	Knob	RDK-338	Fine tuning model 21C115
	Knob	RDK-339	Channel selector model 21C115
	Knob	RDK-340	(2) brightness and vert. hold model 21C115
	Safety glass	RDW-061	Model 21T14
	Safety glass	RDW-068	Model 21C115

TROUBLE SHOOTING AIDS (cont)

PROPERTY OF
L. F. BLANKENSHIP
3981 MEADE ST.
DENVER, COLORADO

POWER

DEAD SET

If filaments fail to light, check AC interlock assembly, yoke plug interlock, switch on volume control and T1. If filaments light, substitute V19 and V20. Check B+ filter and decoupling components.

SMALL AND/OR DIM PIX

Substitute V19 and V20. Check B+ filter and decoupling components.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V15, V16, V17 and V18. Check waveform W13.

If Satisfactory	If Unsatisfactory
Check C78, C81, C82, R94, R96, R97, L32, T2, T4A and other associated circuit components.	Check C75, C76, C77, R85, R88, R92 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V15, V16, V17, V18, V19, and V20. Check picture tube. Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check by substitution V15, V16, V17, V18, V19 and V20. Check C78, R94, R97, T2, T4A and other associated circuit components.

GENERAL

RASTER SOUND NO PIX

Follow procedure outlined under "Loss of Video".

RASTER NO SOUND NO PIX

Check by substitution V1, V2, V3, V4, and V5. Check video detector crystal and assembly. Check other associated components.

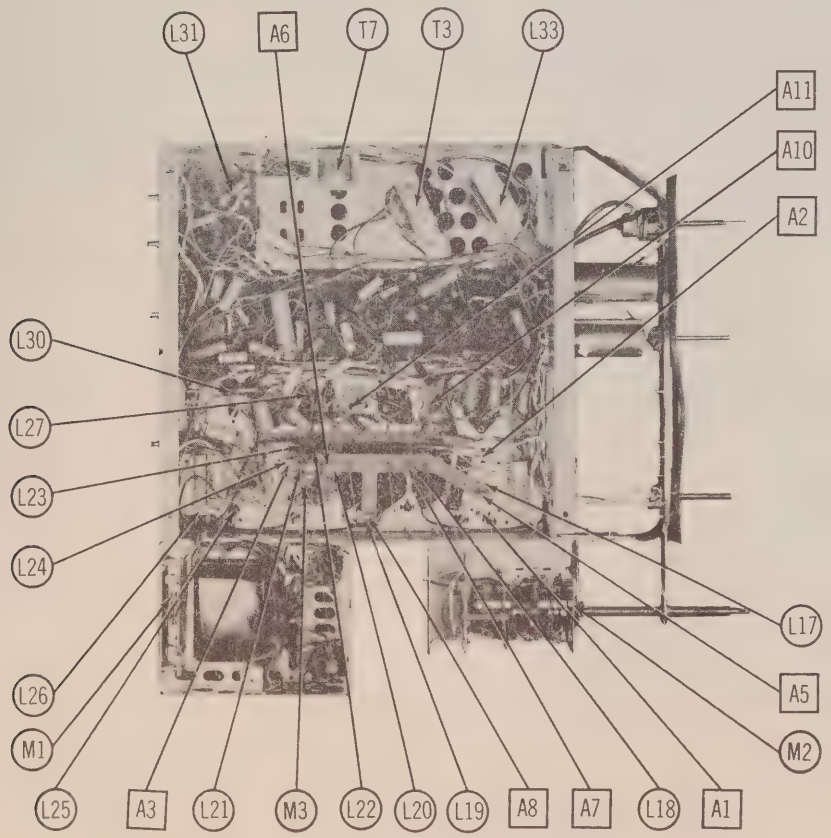
NO RASTER NO SOUND

Follow procedure outlined under "Dead Set".

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing. Check video signal for interference pulses.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR & ALIGN. IDENTIFICATION

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

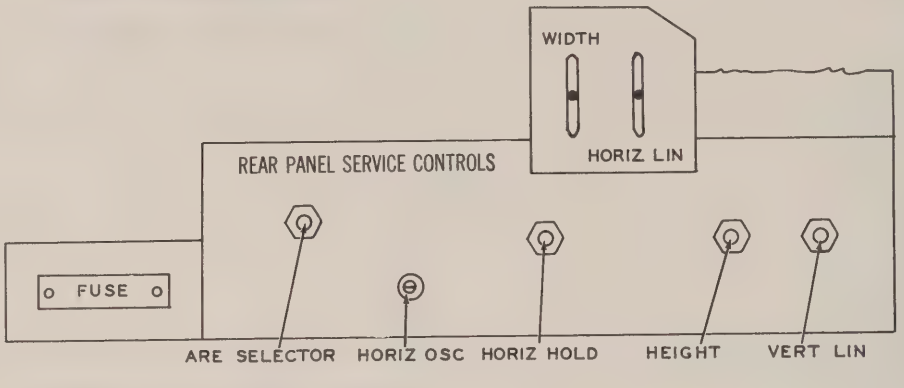
PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis . (See disassembly instructions) .

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the Horiz.Osc.slug (L30) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L29) located on top of chassis. (See tube placement chart).

FUSES

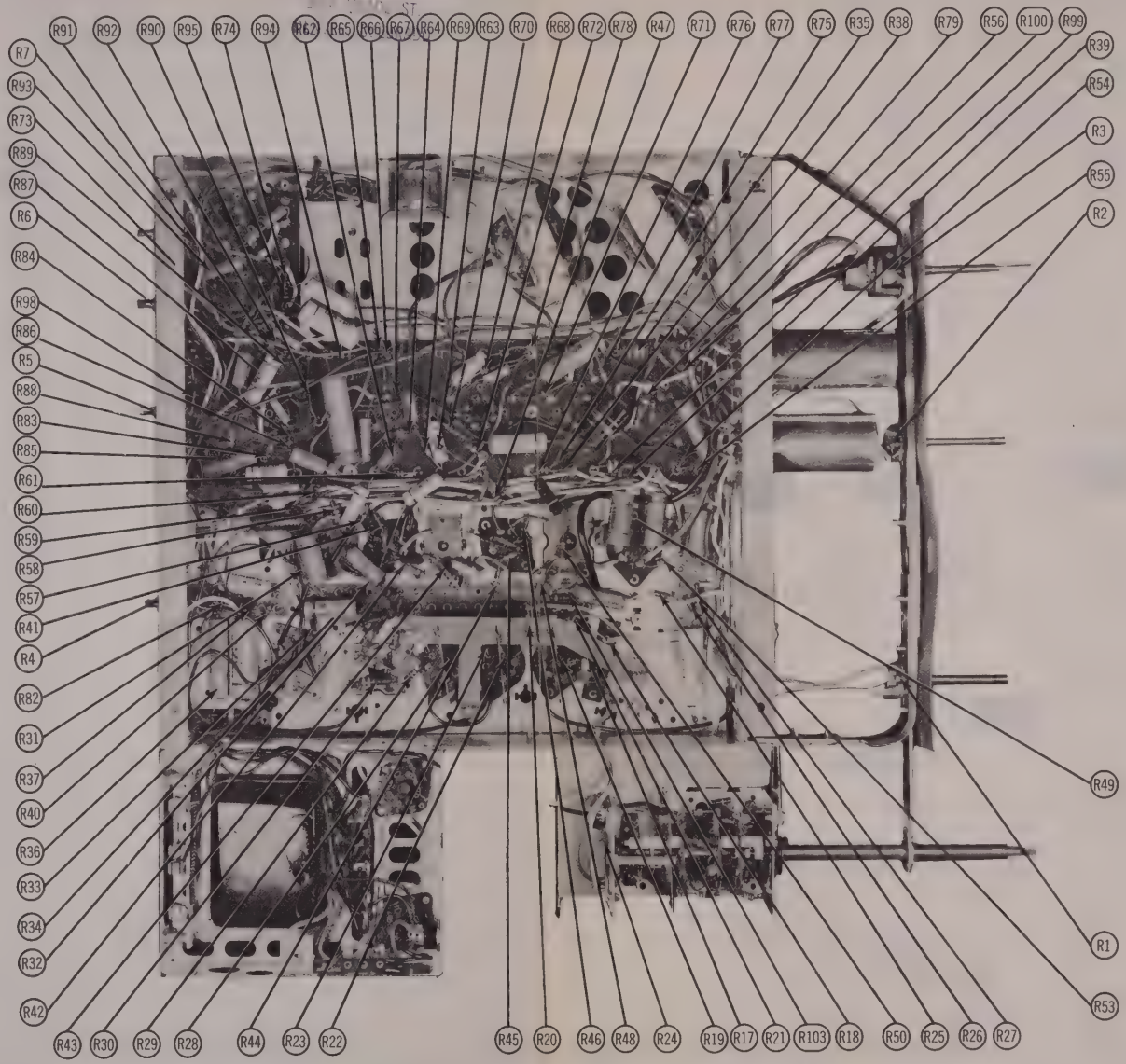
One fuse is used for LV power supply protection. (For location, see tube placement chart).

CENTERING

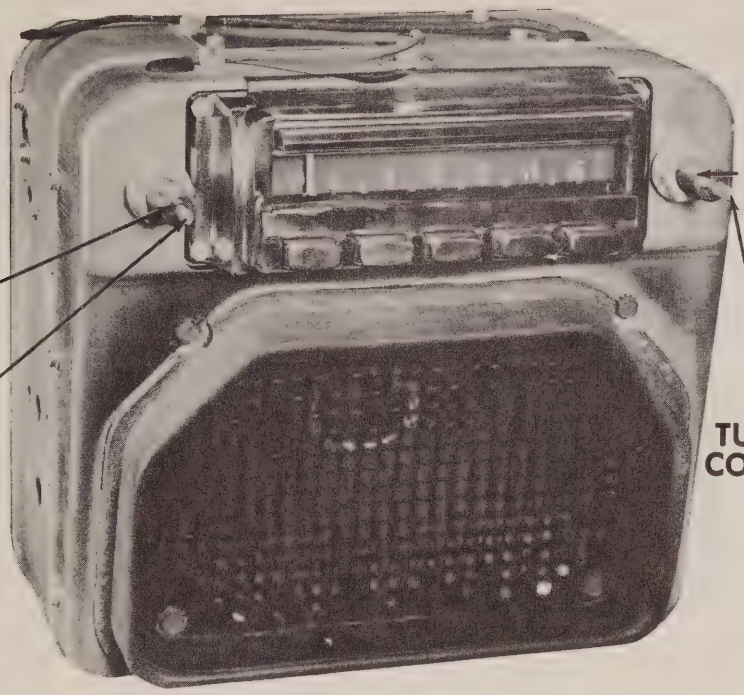
Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side and up and down until picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 6 push on type control knobs from front panel.
2. Remove 8 wood and 1 metal screws. Remove rear cover.
3. Disconnect built-in antenna. Disconnect transmission lines.
4. Disconnect speaker, yoke plug, horizontal yoke plug (small), CRT socket and HV lead.
5. Remove 5 chassis bolts. Remove chassis.
6. Remove 4 speaker nuts. Remove speaker.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



PROPERTY OF
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DENVER, COLORADO

PACKARD
MODELS 439338, 439339

PACKARD
MODELS 439338, 439339

TRADE NAME	Packard Model 439338, 439339 (For 1953 Series 26 Packard Autos)
MANUFACTURER	Packard Motor Car Co., Detroit 32, Mich.
TYPE SET	Battery Operated Custom Built Automobile Superheterodyne Receiver
TUBES (Nine)	Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AV6 Det.-AF Amp., 6AV6 AVC-Phase Inv., (2) 6V6GT Audio Output, 12AV7 Trigger Amp, 0Z4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 5.6 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Set sensitivity control to minimum (position 2).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	260KC (400~Mod)	High frequency end stop	Across voice coil	A1, A2, A3,	Adjust for maximum deflection.
2.	"	"	"	"	"	A4	Adjust for MINIMUM deflection.
3.	68MMF	High side to antenna connector. Low side to chassis.	1615KC	"	"	A5,	Check setting of A8. The rear of the core should be 1 25/32" from mounting end of coil form. Adjust A5 for maximum deflection.
4.	"	"	"	"	"	A6, A7	Adjust for maximum deflection.
5.	"	"	600KC	Tune to 600KC signal	"	A9, A10	Adjust for maximum deflection. Repeat step 4.
6.	"	"	1000KC	Tune to 1000KC signal	"		If necessary, set pointer to 1000KC on dial with 'pointer adjustment" screw (located on end of core guide bar).

7. To set push buttons:
   (a) Open hinged door below dial to expose station selector tabs.
   (b) Tune in the desired station nearest low frequency end of dial.
   (c) Move the selector tap on the extreme left to coincide with the pointer tip.
   (d) Repeat above procedure for remaining selector tabs choosing stations from left to right on the dial.

8. With radio installed in car and antenna fully extended, tune in a weak station between 600 and 1000KC and adjust A7 for maximum volume.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		PACKARD PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amp.	6BA6	6BA6	7BK	
V4	Det-AF Amp.	6AV6	6AV6	7BT	
V5	AVC-Phase Inv.	6AV6	6AV6	7BT	
V6	Audio Output	6V6GT	6V6GT	7S	
V7	Audio Output	6V6GT	6V6GT	7S	
V8	Trigger Amp.	12AU7	12AU7	9A	
V9	Rectifier	0Z4	0Z4	5R	

CAPACITORS

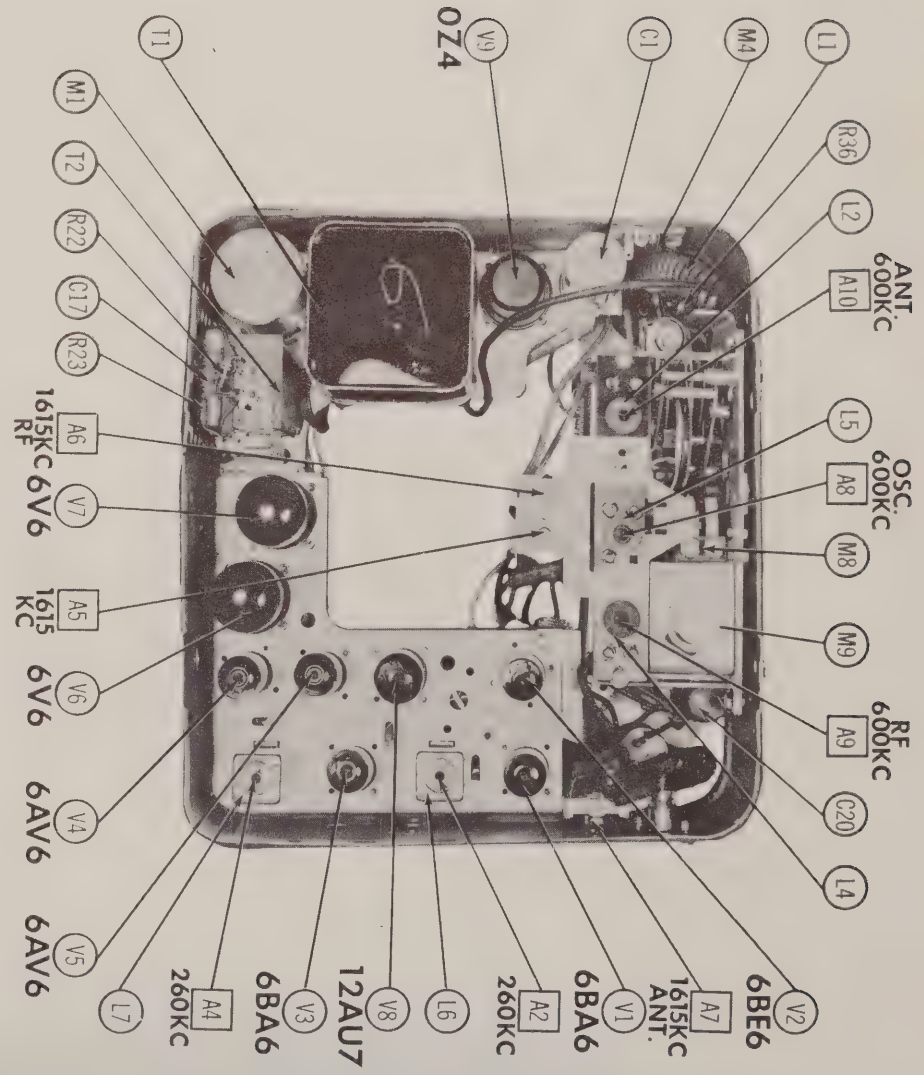
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	PACKARD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■20	400	M908	AFH3-120		CO99		FP345.8	TVL-3678	
B	▲20	400								
C	20	25								
C2	.05	200	6512	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	.10	200	6590	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C4	.05	200	6512	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C5	68	500	G680	1469-0007		5R5Q7			MS-47	
C6	39	500	G390	1469-00004		5R5Q4			MS-44	
C7	260		7257567							
C8	.1	400	6513	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C9	100	500	1219498	1468-0001		5W5T1		MC-235	1FM-31	
C10	100	500	1219498	1468-0001		5W5T1		MC-235	1FM-31	
C11	.002	600	6528	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C12	.001	600	6527	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C13	.015	600	7237719	P688-015		PTE6S15		PT6115	6TM-S15	
C14	.005	600	6531	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C15	.02	600	6511	P688-02	DD-203	PTE6S2		PT612	6TM-S2	
C16	.02	600	6511	P688-02	DD-203	PTE6S2		PT612	6TM-S2	
C17	.1	600	6590	P688-1	DF-104	PTE6S1		PT601	6TM-P1	
C18	.008	800	1219594	P1088-008		PTE16D8		PT1628	MB-D8	
C19	.002	600	6528	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C20	.5	100	6592	P288-5		PJ2P5		PT405	2TM-P5	
C21	.006	1600	H602	P1688-006		PTE16D6		PT1626	MB-D6	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PACKARD PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	2Meg	½	7263404				UF155A	Tone (panel)
B	1.5Meg		Not Req.				UR26A	Volume (rear)
C	Shaft		Not Req.				EB214	Attach to R1A
D	Switch		Not Req.				US-26	Attach to R1B

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PACKARD PART No.	IRC PART No.	
R2	100Ω	½	A-101	BTS-100	
R3	2. 2Meg	½	A-225	BTS-2. 2Meg	
R4	10KΩ	1	B-103	BTA-10K	
R5	330KΩ	½	A-334	BTS-330K	
R6	22KΩ	½	A-223	BTS-22K	
R7	1. 5Meg	½	A-155	BTS-1. 5Meg	
R8	12KΩ	2	1212491	BTB-12K	
R9	10Ω	½	A-100	BTS-10	
R10	150Ω	½		BTS-150	Note 1.
R11	1Meg	½	1220169	BTS-1Meg	
R12	1. 5Meg	½	1219492	BTS-1. 5Meg	
R13	100KΩ	½	A-104	BTS-100K	
R14	1Meg	½	1220169	BTS-1Meg	
R15	6. 8Meg	½	A-685	BTS-6. 8Meg	
R16	220KΩ	½	A-224	BTS-220K	
R17	3300Ω	½	1220173	BTS-3300	
R18	6. 8Meg	½	A-685	BTS-6. 8Meg	
R19	220KΩ	½	A-224	BTS-220K	
R20	220KΩ	½	A-224	BTS-220K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PACKARD PART No.	IRC PART No.	
R21	390Ω	½	A-391	BTS-390	
R22	470Ω	½	A-471	BTS-470	
R23	3300Ω	½	A-332	BTS-3300	
R24	360Ω	1	7234563	BTA-360	
R25	220KΩ	½	A-224	BTS-220K	
R26	100KΩ	½	A-104	BTS-100K	
R27	1800Ω	3	1214573		
R28	330Ω	½		BTS-330	Note 2.
R29	560Ω	½		BTS-560	
R30	2200Ω	½		BTS-2200	
R31	1000Ω	½	1220176	BTS-1000	
R32	6800Ω	1	1216154	BTA-6800	
R33	47KΩ	1	B-473	BTA-47K	
R34	120KΩ	½	1213271	BTS-120K	
R35	3. 3Meg	½	A-335	BTS-3. 3Meg	
R36	13KΩ	½	7231539	BTS-13K	
R37	47KΩ	1	1220188	BTA-47K	
R38	220Ω	1	B-221	BTA-220	
R39	56KΩ	1	1220213	BTA-56K	

Note 1. Some models may use a 100Ω resistor in this application.
Note 2. Some models may use a 220Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	PACKARD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	6. 3VCT @ 3. 8A	490VCT .063ADC			6060		P-4071		

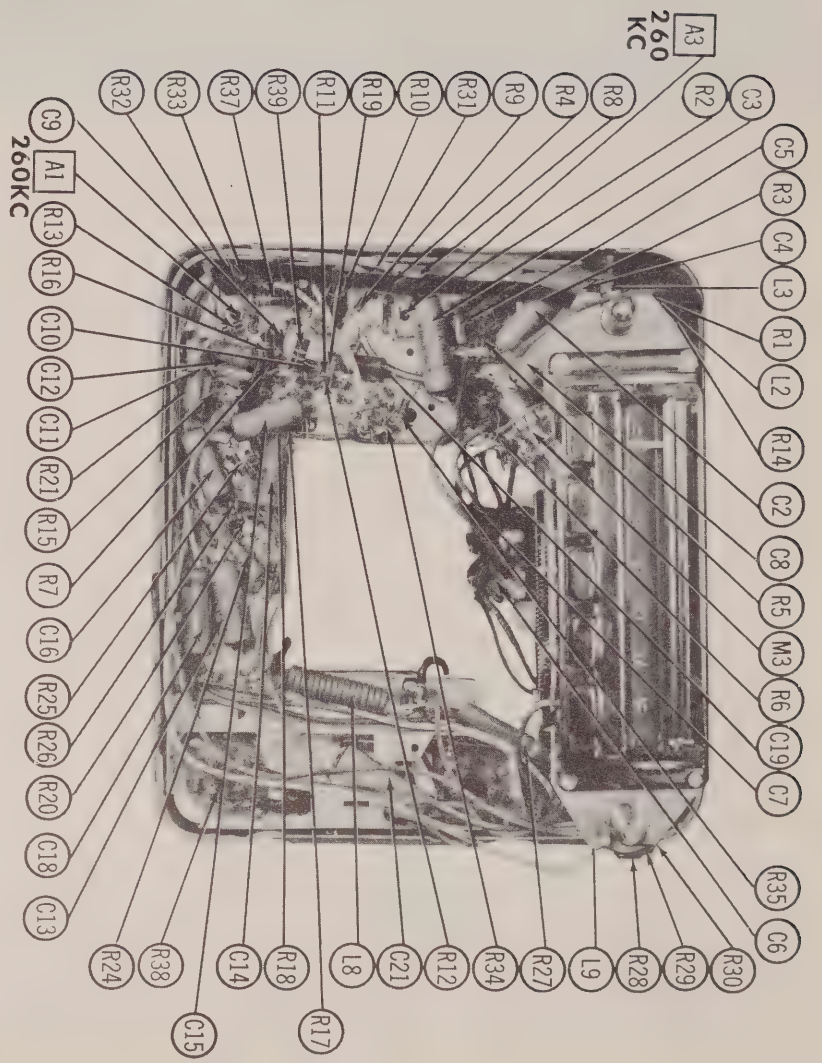
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		PACKARD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	7. 1KΩ	3. 8Ω	375Ω CT	. 34Ω	6063	A-3852	A-2936	RO-110	S-15X	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	PACKARD PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6"X9"	PM	3. 8Ω	7260362	ST-810 Mod P69-V	69A3	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	PACKARD PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coupling	.6Ω		7255738			4612	9 Microhenries
L2	Ant. Coil	9.5Ω		7257979				
L3	RF Coupling	4.6Ω		7240251			4626	28 Microhenries
L4	RF Coil	9.5Ω		7257979				
L5	Osc. Coil	.9Ω	4Ω	7263287				
L6	Input IF	38Ω	38Ω	1219508	16-6752	BC-350	12-H1	
L7	Output IF	29Ω	29Ω	1220204	16-6754	BC-354	12-H6	
L8	Fil. Choke	0Ω		1217846				
L9	Fil. Choke	0Ω		1217846				

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				PACKARD PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	6.3V	115∿	8542	5300	859	5300	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PACKARD PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A	147685	1220177	307014. (SFE-14A)	155014	SFE14	HD1

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	PACKARD PART No.	NOTES
M3	Dial light	44	# 44 bayonet
M4	Spark, plate	1219768	
M5	Switch	7263340	Tuner return
M6	Switch	7263345	Station selector
M7	Switch	7263400	Sensitivity control
M8	Relay	7263365	
M9	Solenoid & plunger	7259010	Assembly
M10	Tab rail board	7263703	Late, production
M11	Tab rail board	7263783	Early production
M12	Push button	7263368	and slide assembly, late production
M13	Push button	7263784	and slide assembly early production
A7	Trimmer cap	7260158	Antenna
A5, A6	Trimmer cap	7242454	Dual RF and osc.
	Knob	7263495	(2) off-on volume and tuning
	Lever	7263486	(2) tone and sensitivity controls
	Escutcheon	7263498	Control (2)
	Dial glass	7263408	

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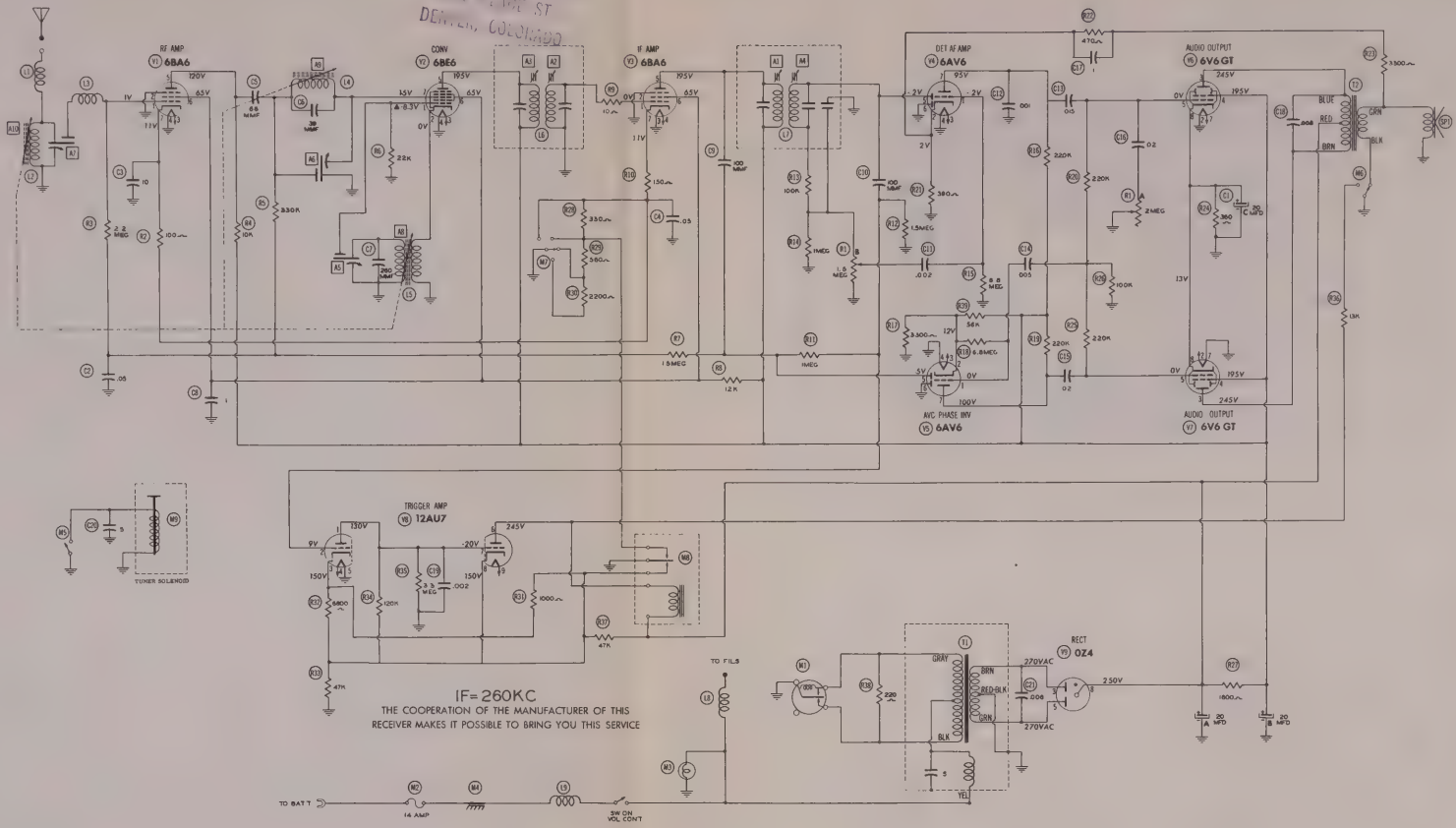

IF= 260KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1 - DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BA6	6.33Meg	0Ω	3Ω	0Ω	11.8KΩ	13.8KΩ	13.3KΩ		
V 2	6BE6	23KΩ	4Ω	3Ω	0Ω	11.8KΩ	13.8KΩ	4.33Meg		
V 3	6BA6	48Ω	0Ω	0Ω	3Ω	11.8KΩ	13.8KΩ	13.3KΩ		
V 4	6AV6	6.33Meg	380Ω	3Ω	0Ω	750KΩ	0Ω	1330KΩ		
V 5	6AV6	6.33Meg	3.3KΩ	2Ω	0Ω	2.5Meg	0Ω	1220KΩ		
V 6	6V6GT	INF	0Ω	115Ω	11.8KΩ	330KΩ	INF	20	380Ω	
V 7	6V6GT	INF	0Ω	115Ω	11.8KΩ	330KΩ	100KΩ	20	380Ω	
V 8	12AU7	1170KΩ	1.5Meg	154KΩ	0Ω	0Ω	118.5KΩ	1170KΩ	154KΩ	30
V 9	0Z4	0Ω	INF	300Ω	INF	310Ω	INF	INF	450Ω	

† MEASURED FROM PIN 8 OF V8
‡ MEASURED WITH MT DC MICRON SENSIVITY POSITION
* MEASURED FROM PIN 8 OF V8
* TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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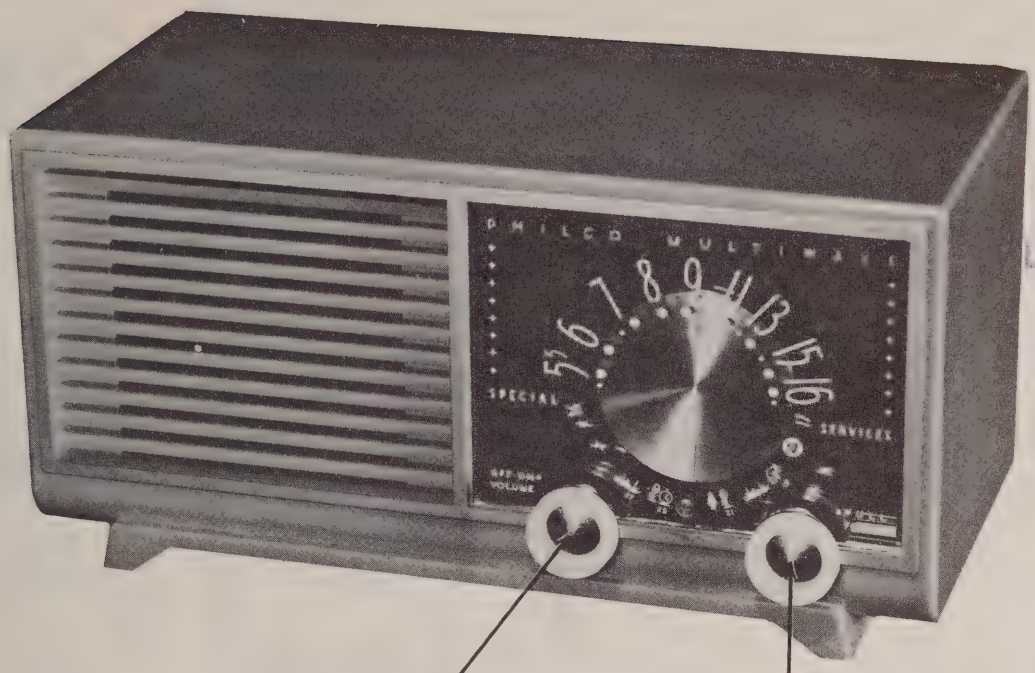
PHILCO
MODEL B574 (CODE 121)



PROPERTY OF
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DENVER, COLORADO

PHILCO
MODEL B574 (CODE 121)

TRADE NAME	Philco Model B574 (Code 121)
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	AC-DC Operated 2 Band AM Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 35C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC/DC
RATING	.24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC
SPECIAL SERVICES	1700KC-3400KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher tha n necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400%Mod)	Broad-cast	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	"	A5	Fashion loop fo several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	"	Tune to 1500KC signal	"	A6	"
4.		"	3200KC	Special Services	Tune to 3200KC signal	"	A7	"

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PARTS LIST AND DESCRIPTIONS

PHILCO
MODEL B574 (Code 121)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	35C5	35C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	30	150	30-2575-34	PRS150/30-30-30		EDL32V2-15		3N534	TVA-3444	Orange
B	25	150								Red
C	20	150								Blue
C2	.05	200	45-3505-28	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	944	500	30-1220-65							
C4	47		30-1230-4	SI47	D6-470		GP1K-470	UC-5447	5GA-Q47	
C5	220	500		1468-00025	D6-221		GP2K-221	MC-240	1FM-325	
C6	7.5		30-1224-83							
C7	.05	200	45-3505-28	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C8	5000		30-1238-1	BPD-005	MD-502	TM5D5	GP2-333-502	DC-525	5HK-D5	
C9A	*									
B	5000		*PC1	*PA-112-1	*PC-70		*1406-01		*104C4	
C	*									
C10	.022	400	45-3505-43	P488-022		PTE4S22		PT4122	4TM-S22	
C11	.047	400	30-4650-45	P488-047		PJ4S5		PT4147	4TM-S47	
C12	.1	400	45-3505-47	P488-1		PJ4P1		PT401	4TM-P1	

Items C9A, C9B, C9C, R7A and R7B are combined in one unit.
When replacing items separately C9A and C9C should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	33-5566-41	Q13-133	AG-60-Z	B-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

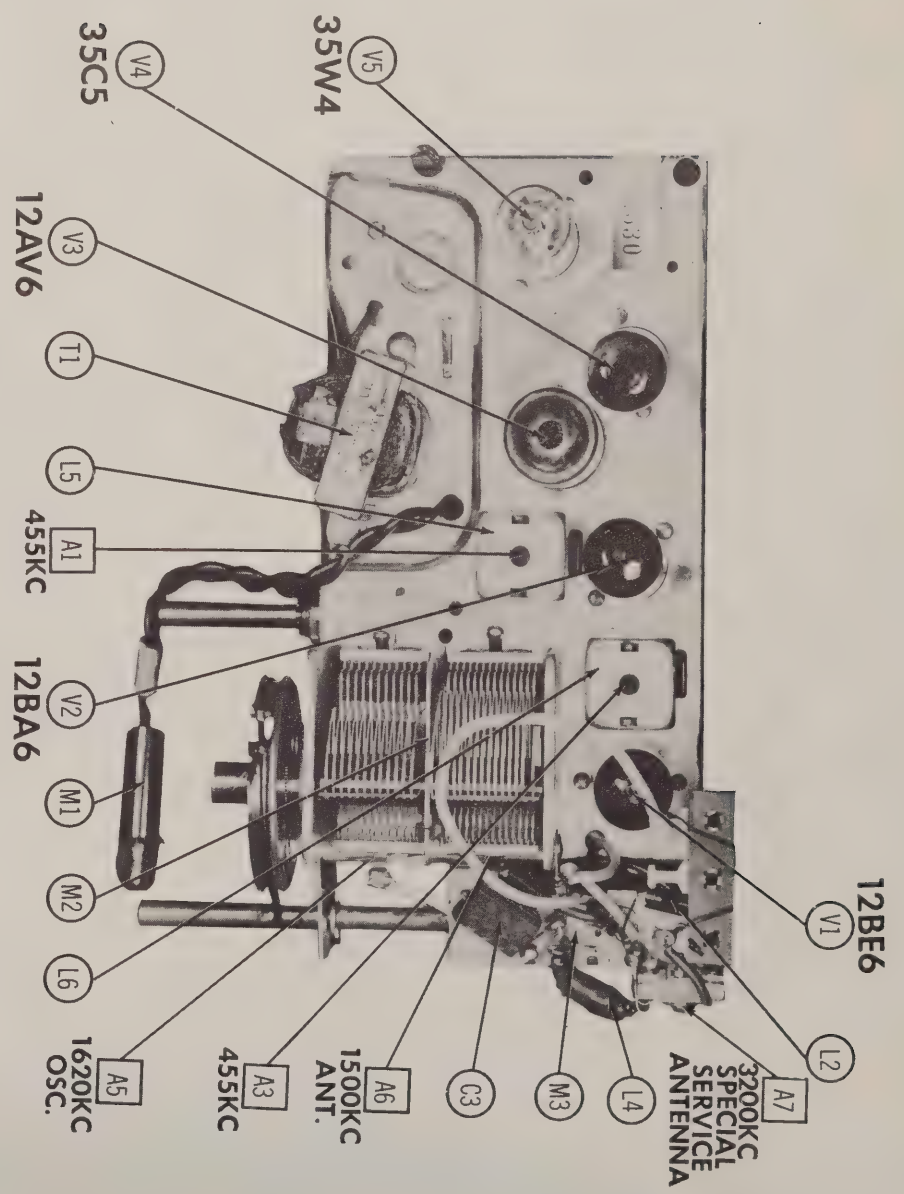
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PHILCO PART No.	IRC PART No.	
R2	22KΩ	½	66-3228340	BTS-22K	
R3	4700Ω	½	66-2478340	BTS-4700	
R4	2.2Meg	½	66-5228340	BTS-2.2Meg	
R5	47 KΩ	½	66-3478340	BTS-470K	
R6	10Meg	½	66-6108340	BTS-10Meg	
R7A	500KΩ	½		BTS-500K	
B	500KΩ	½	♦ PC1	BTS-500K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PHILCO PART No.	IRC PART No.	
R8	150Ω	½	66-1158340	BTS-150	
R9	220Ω	1	66-1224340	BTA-220	
R10	1000Ω	½	66-2108340	BTS-1000	
R11	100Ω	2	33-1343-3	BTB-100	

♦ Items R7A, R7B, C9A, C9B, C9C, are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.2KΩ	3.2Ω	245Ω	.8Ω	32-8384-4	A-3332	A-3025	RO-2 ①	S-2X①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.2Ω	36-1627-25 36-1627-8 ①	ST-113 Mod. P4-X	4A1	① Alternate PM speaker

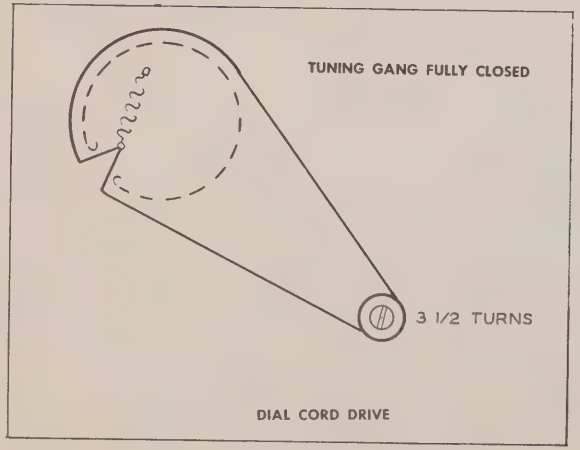
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	BC Loop Ant.	3.1Ω		76-8362-1				Includes cabinet-back
L2	SS Ant. Coil	1.7Ω		32-4561-3				
L3	BC Osc. Coil	1Ω	6.5Ω	32-4453-6			70-Osc. *	
L4	SS Osc. Coil	3Ω		32-4562-2				
L5	Input IF	15Ω	15Ω	32-4161A	16-6758	BC-352	12-C1	
L6	Output IF	15Ω	15Ω	32-4240A	16-6770	BC-355	12-C6	

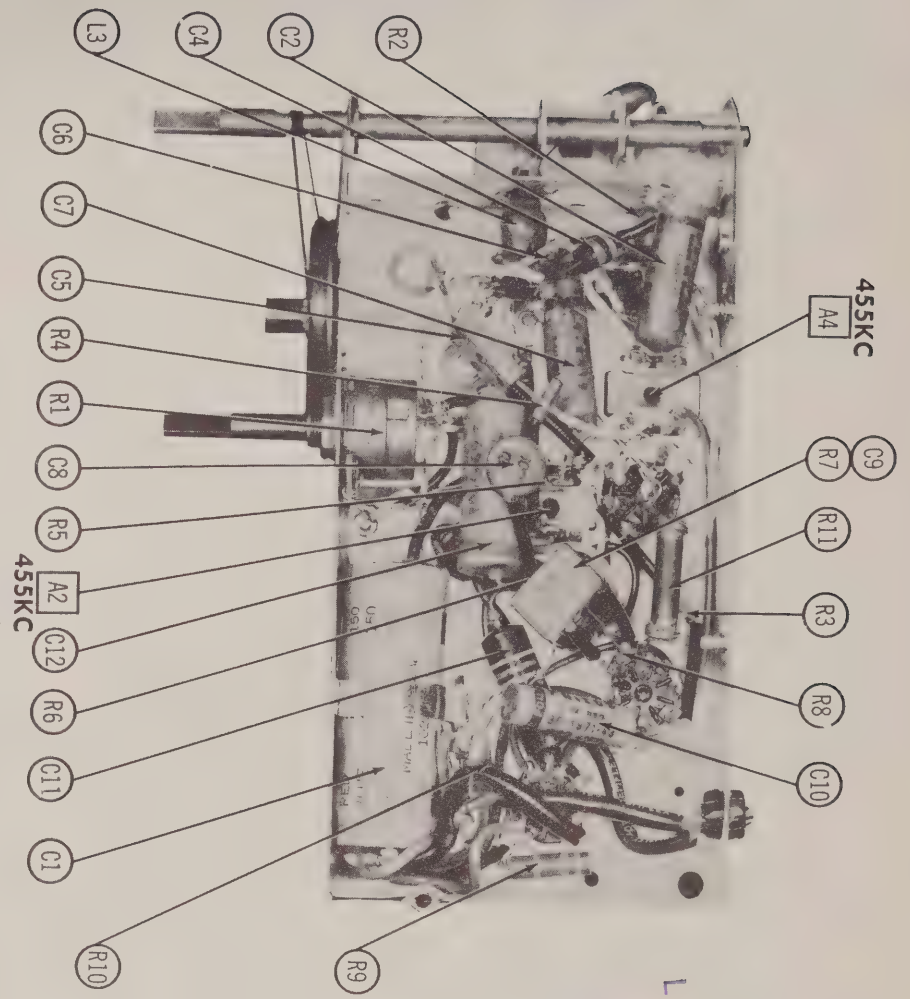
* Disregard tap on secondary winding.

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M1	Dial light	34-2068	#47
M2	Tuning cap	31-2751-14	2 gang
M3	Switch	42-1796-2	BC-SS selector (d. p. s. t.)
A7	Trimmer cap	31-6473-32	Special service adjust
	Cabinet	10926-29	
	Knob	54-4773-3	2 used
	Dial pointer	28-9502FCP	



CHASSIS—BOTTOM VIEW



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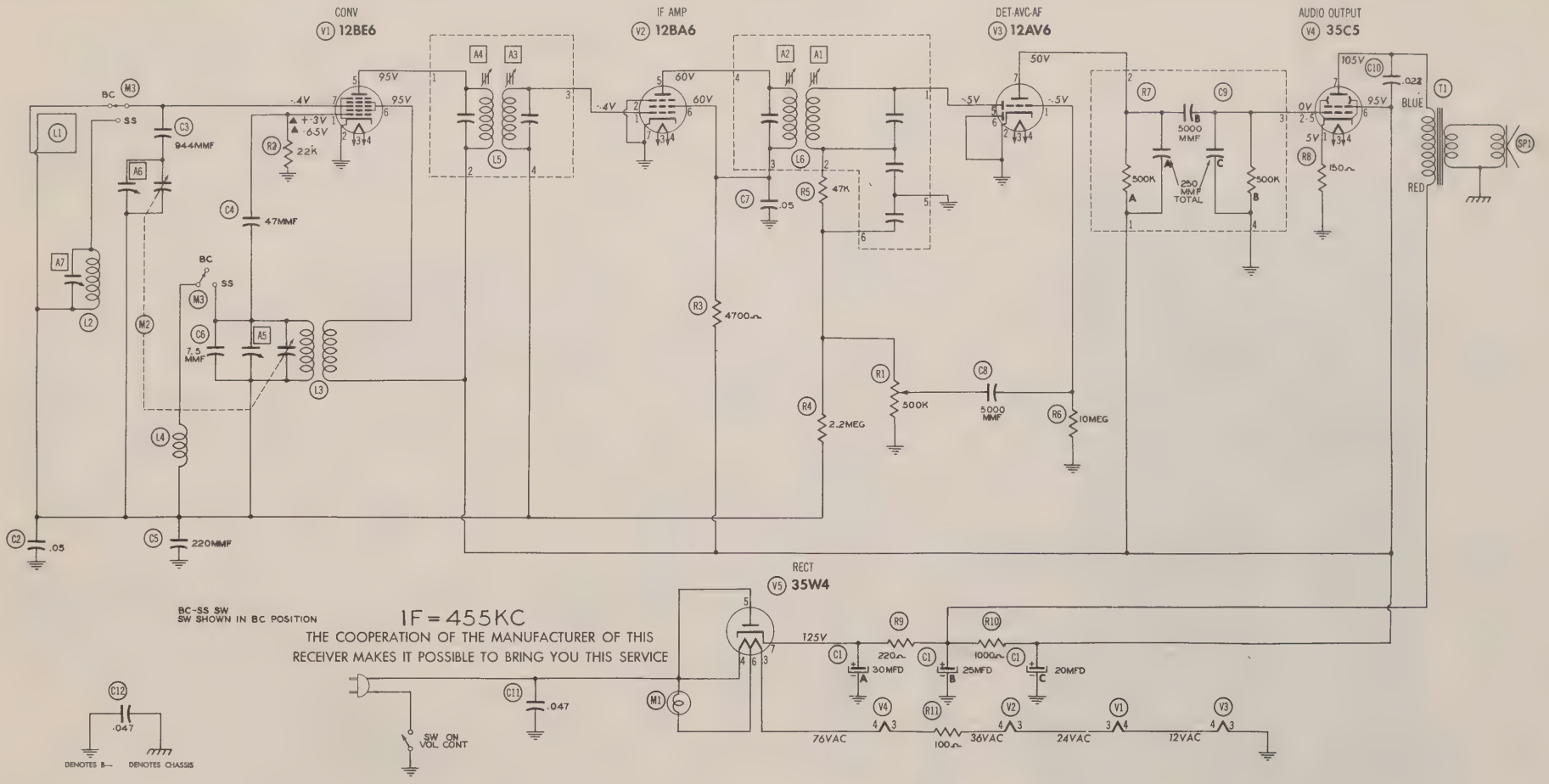
PHILCO
MODEL B574 (Code 121)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	0Ω	33Ω	16Ω	■1.2KΩ	■1.2KΩ	2.7Meg
V 2	12BA6	2.7Meg	0Ω	33Ω	48Ω	■5.9KΩ	■5.9KΩ	0Ω
V 3	12AV6	10Meg	0Ω	0Ω	16Ω	1Meg	0Ω	■500KΩ
V 4	35C5	150Ω	500KΩ	380Ω	420Ω	INF	■1.2KΩ	■465Ω
V 5	35W4	■220Ω	■220Ω	420Ω	450Ω	450Ω	450Ω	200KΩ

† MEASURED IN SPECIAL SERVICE POSITION
ALL OTHER MEASUREMENTS TAKEN IN BC POSITION
■ MEASURED FROM PIN 7 OF V5

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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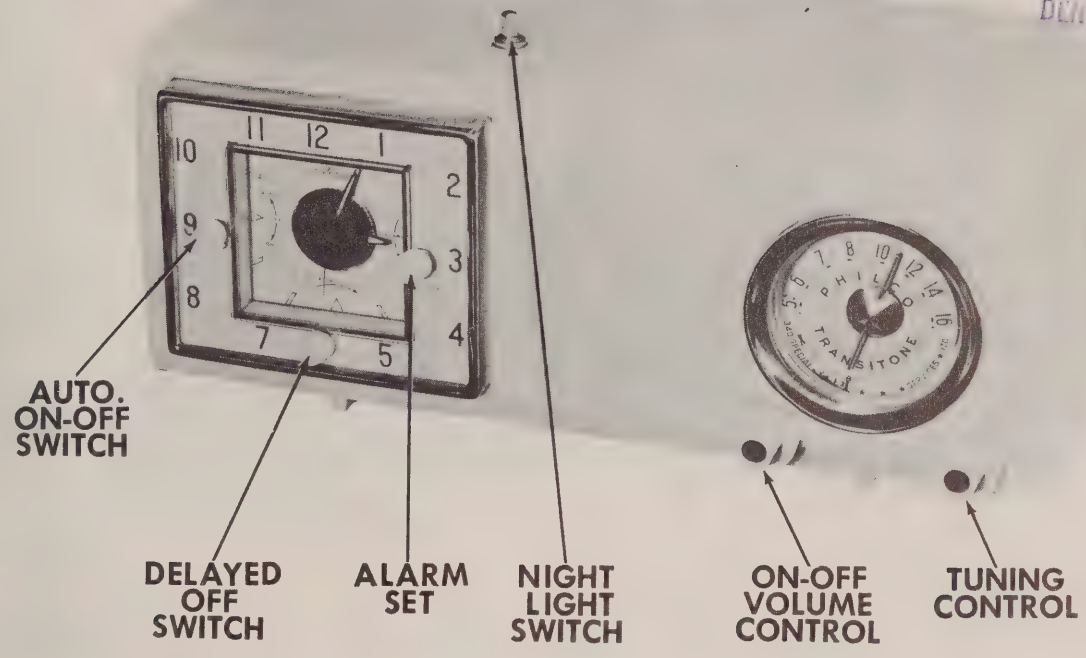
1- DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2- Socket connections are shown as bottom views.
3- Measured values are from socket pin to common negative.
4- Line voltage maintained at 117 volts for voltage readings.
5- Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6- Volume control at maximum, no signal applied for voltage measurements.

RETMA MEMBER

PHILCO
MODELS B714 (Codes 121, 123), B714X (Code 121)

PROPERTY OF
L. F. [illegible]
[illegible]
DENVER, COLORADO

PHILCO
MODELS B714 (Codes 121, 123), B714X (Code 121)



PHILCO
MODELS B714 (Codes 121, 123), B714X (Code 121)

TRADE NAME	Philco Models B714 (Codes 121, 123), B714X (Code 121)
MANUFACTURER	Philco Corp.; Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	AC Operated 2 Band AM Superheterodyne Receiver with Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 35C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING .22 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC — SPECIAL SERVICES 1700-3400KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher tha necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400%Mod)	BC	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	"	Tune to 1500KC signal	"	A6	"
4.		"	3200KC	SS	Tune to 3200KC signal	"	A7	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	35C5	35C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	30	150	30-2573	PRS150/30-30-30		BBRT32V-215		3N534	TVA-3444	Orange Red Blue
B	25	150								
C	20	150								
C2	.05	200	30-4650-45	P288-05	DF-503	PTE4S5		PT415	2TM-S5	
C3	944	500	30-1220-65							
C4	47		30-1230-4	SI47	D6-470		GP2L-470	UC-5447	5GA-Q47	
C5	220	500	62-122001001	1479-00025		5W5T25		MC240	1FM-325	
C6	.05	200	30-4650-45	P288-05	DF-503	PTE4S5		PT415	2TM-S5	
C7	5000		30-1238-1	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C8A	5000									
B	250		*30-6001	*PA-112-1	*PC-80		*1404-01		*102C1	
C										
C9	.022	400	30-4650-43	P488-022		PTE4S22		PT4122	4TM-S22	
C10	.047	400	30-4650-45	489ZX-05	DF-503	PJ4S5		PT415	4TM-S5	
C11	.1	400	30-4650-47	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C12	7.5		30-1224-83							

* Items C8A, C8B, C8C, R7A and R7B are combined in one unit.
When replacing items separately C8B and C8C total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	33-5565	Q13-133	AG-60-Z	B-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	22KΩ	½	66-3228340	BTS-22K	
R3	4700Ω	½	66-2478340	BTS-4700	
R4	2.2Meg	½	66-5228340	BTS-2.2Meg	
R5	47KΩ	½	66-3478340	BTS-47K	
R6	10Meg	½	66-6108340	BTS-10Meg	
R7A	500KΩ	½	*30-6001		
B	500KΩ	½			

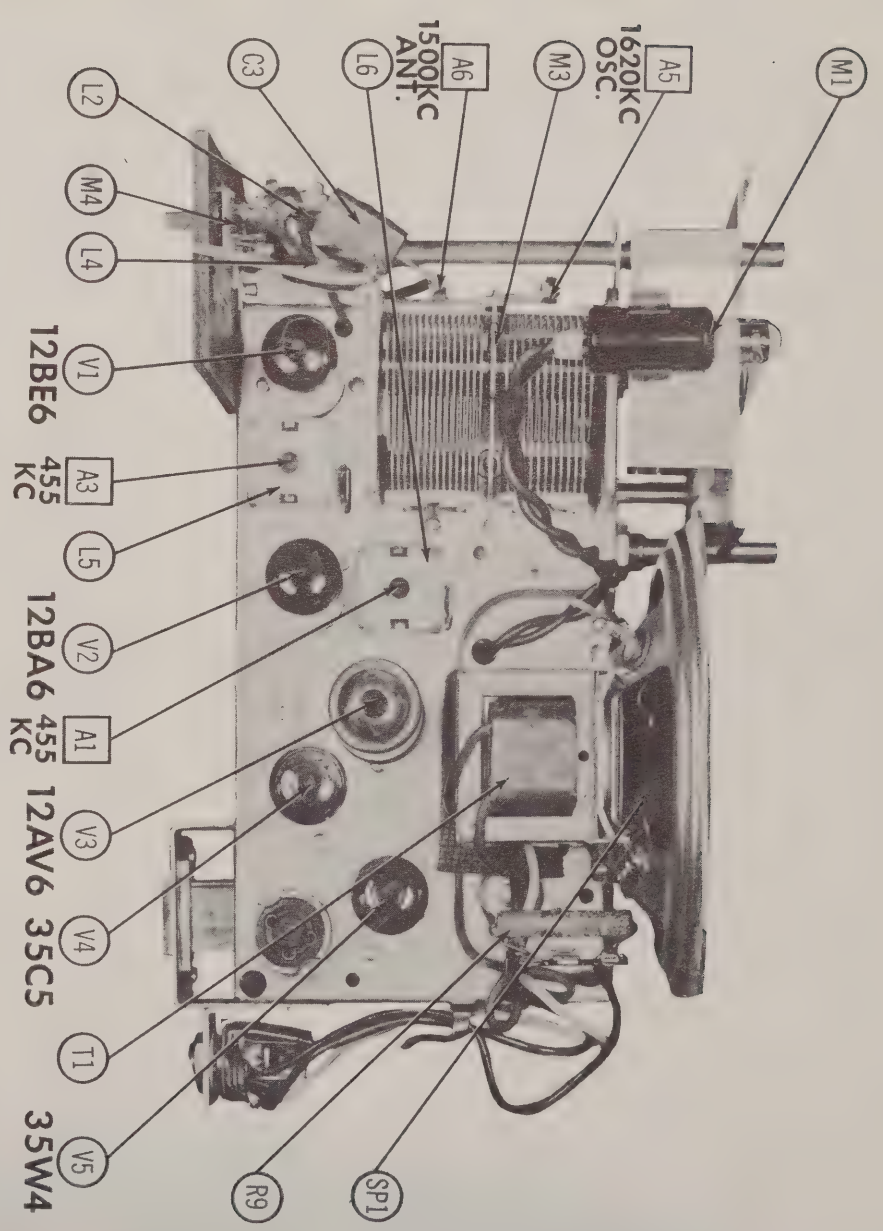
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R8	150Ω	½	66-1158340	BTS-150	
R9	3.3Ω	1	66-9333540		
R10	220Ω	1	66-1224340		
R11	1000Ω	½	66-2108340	BTS-1000	
R12	100Ω	1	33-1343-3		

* Items R7A, R7B, C8A, C8B, C8C are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2.6KΩ	3.3Ω	228Ω	.92Ω	Part of Spkr.	A-3332 ①	A-3025 ①	RO-302 ①	S-1X ①	① Bend mounting tabs down, file out slots, mount on original mounting bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.3Ω	36-1627-27 36-1627-8 ①	ST-113 Mod. P4-X	4A1	① Alternate PM speaker

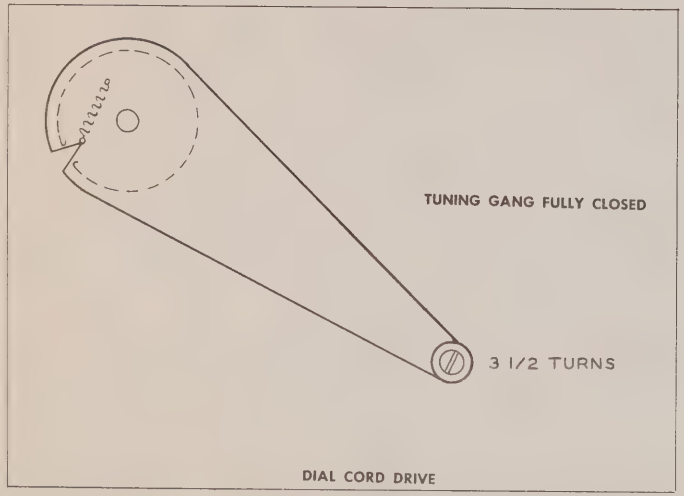
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3Ω		76-7807				Includes cabinet back
L2	SS Ant.Coil	1.1Ω		32-4561-3				
L3	BC Osc. Coil	.9Ω	6Ω	32-4453-6			70-Osc. *	
L4	SS Osc.Coil	2.7Ω		32-4562-2				
L5	Input IF	14Ω	14Ω	32-4161A	16-6758	BC-352	12-C1	
L6	Output IF	14Ω	14Ω	32-4240A	16-6770	BC-355	12-C6	

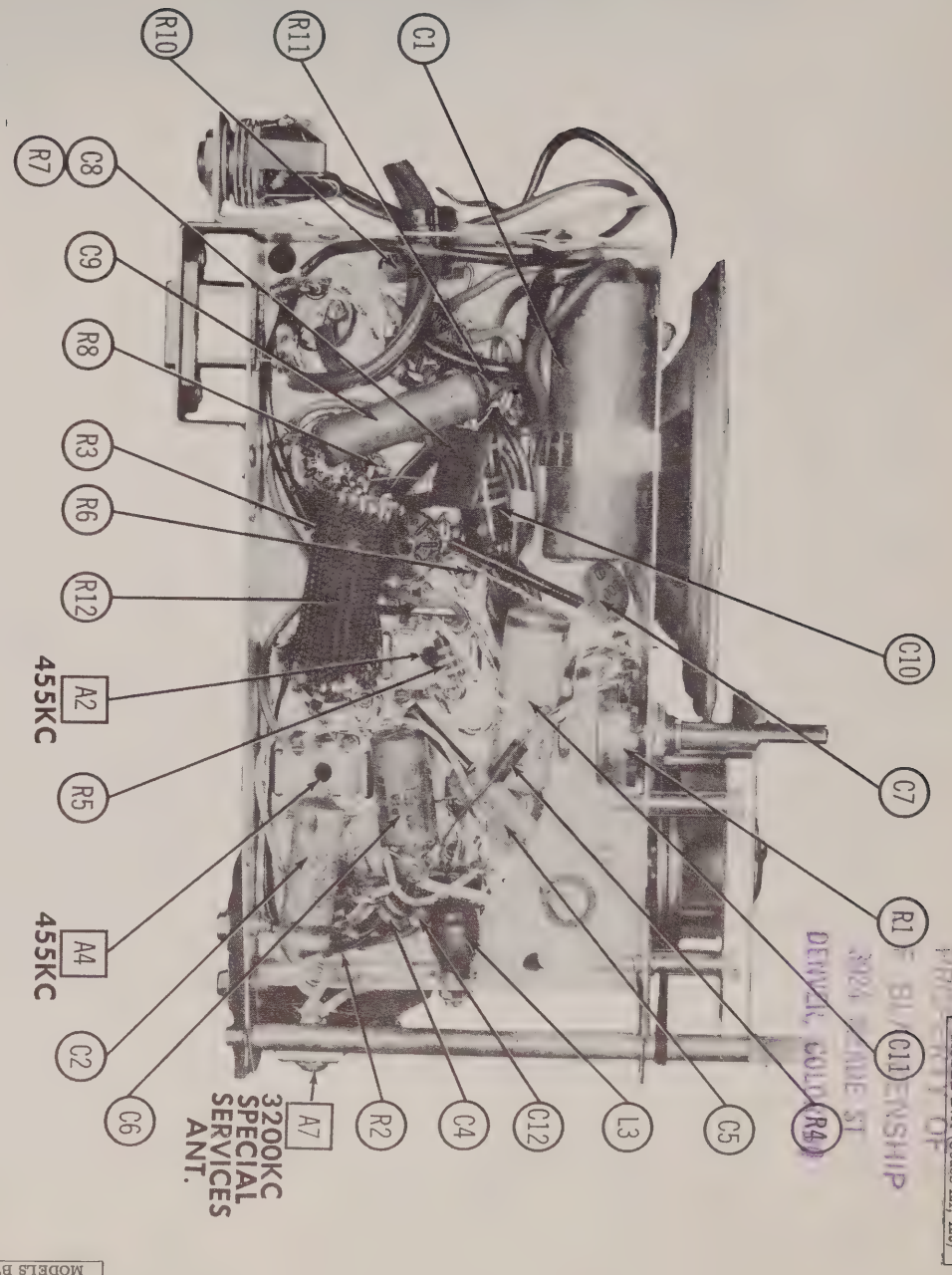
* Disregard tap on secondary winding.

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M1	Dial Light	34-2068	Pilot #47
M2	Dial Light	34-2477	Night Light
M3	Tuning Cap.	31-2751-14	2 Gang (14-483MMF) (9-170MMF)
M4	Switch	42-1796-2	BC-SS Selector (DPDT slide)
M5	Switch	42-2023	Night Light - used in B714 only
M6A	Clock	41-2042-2	Model B714
B	Clock	41-2042-5	Model B714X
A7	Trimmer Cap.	31-6473-29	Special Services trimmer
	Cabinet	11027	White - Model B714
	Cabinet	10940-18	Maroon - Model B714X
	Cabinet	10940-20	Spruce - Model B714X
	Knob	54-4986-3	(2) tuning & volume
	Knob	54-4983-5	(3) Clock
	Knob	54-4986-2	(2) tuning & volume for spruce cabinet
	Knob	54-4986	(2) tuning & Volume for maroon cabinet



CHASSIS—BOTTOM VIEW



PHILCO
MODEL B714 (Codes 121, 123)

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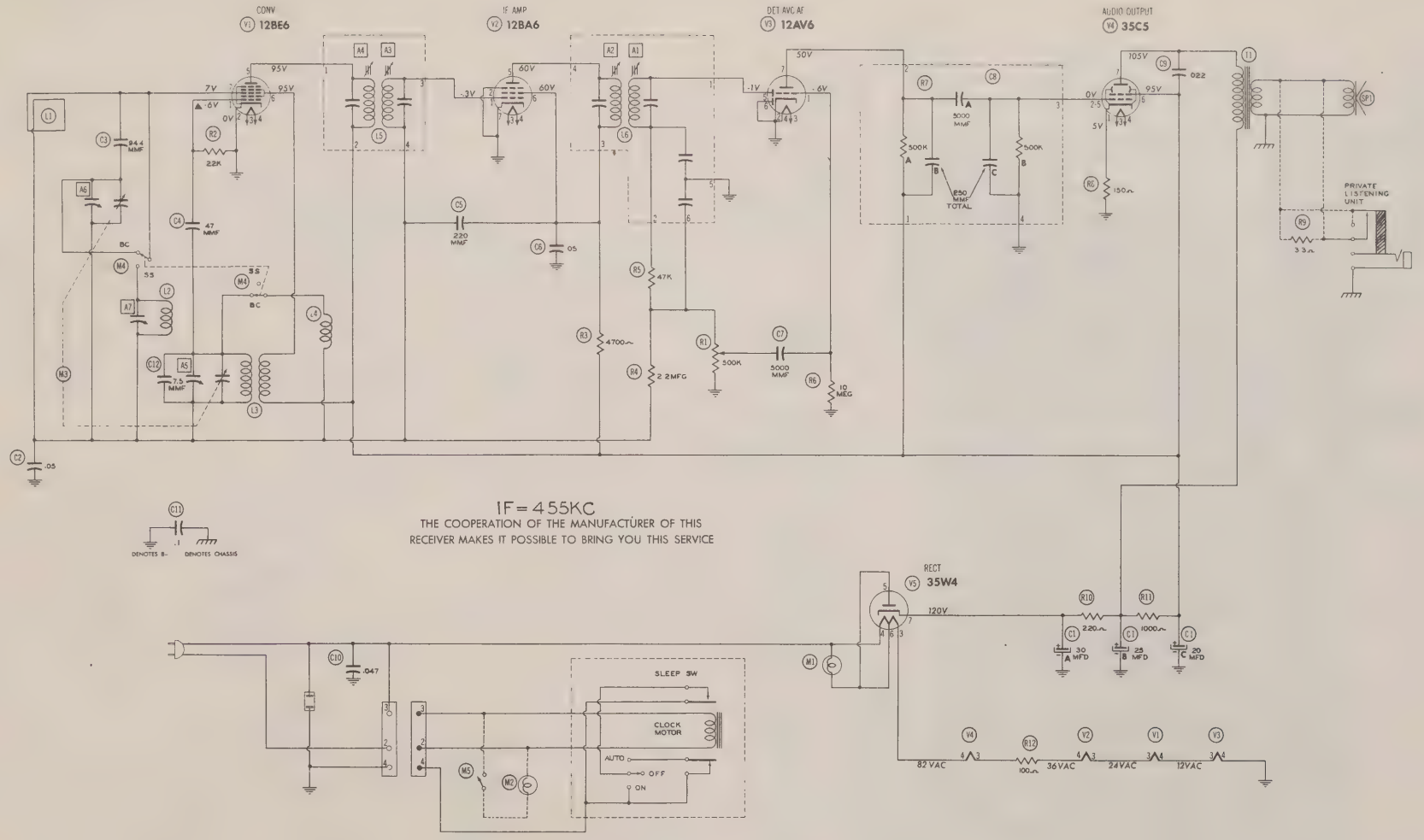
PHILCO
MODELS B714 (Codes 121, 123)



IF = 455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	0Ω	28Ω	14Ω	†1.2KΩ	†1.2KΩ	2.7Meg
V 2	12BA6	2.7Meg	0Ω	28Ω	42Ω	†6KΩ	†6KΩ	0Ω
V 3	12AV6	10Meg	0Ω	14Ω	0Ω	550KΩ	0Ω	†500KΩ
V 4	35C5	150Ω	500KΩ	500Ω	570Ω	INF	†1.2KΩ	†450Ω
V 5	35W4	†230Ω	†230Ω	570Ω	650Ω	640Ω	640Ω	150KΩ

* TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 7 OF V5

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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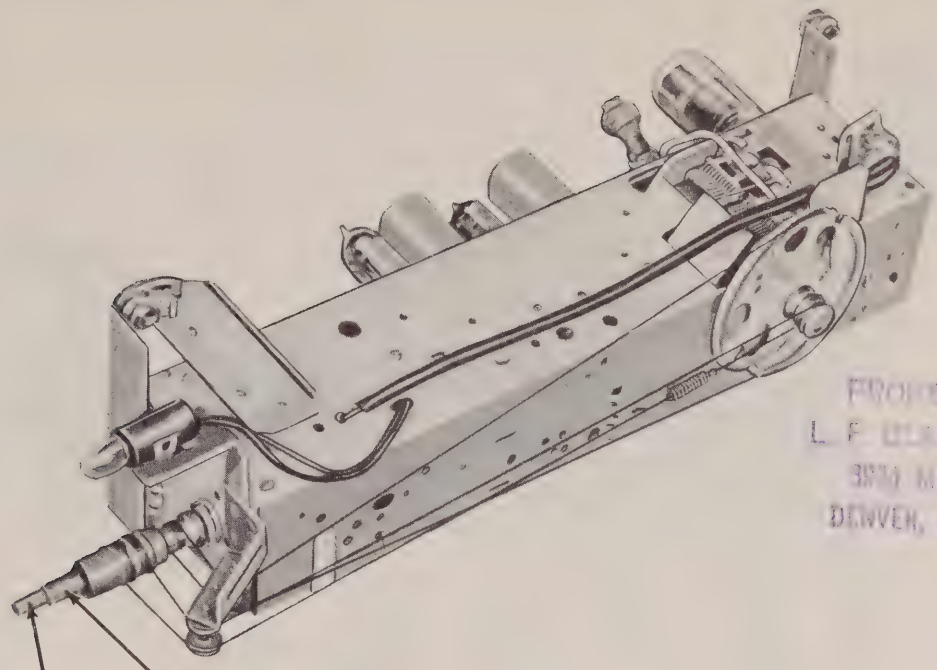
229-10

1- DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2- Socket connections are shown as bottom views.
3- Measured values are from socket pin to common negative.
4- Line voltage maintained at 117 volts for voltage readings.
5- Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6- Volume control at maximum, no signal applied for voltage measurements.

PHILCO
MODEL RT-14



PROPERTY OF
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3530 MEADE ST
DENVER, COLORADO

PHILCO
MODEL RT-14

TRADE NAME	Philco Model RT-14
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	AM Radio Tuner For Use With Philco "B" Line Television Receivers
TUBES (Three)	Types 7A8 Conv., 6BA6 IF Amp., 6AV6 Det.-AVC-Phono Pre-Amp.

TUNING RANGE—BROADCAST 535-1630KC SPECIAL SERVICES 1700-3400KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side thru .1MFD to pin 6 (grid) of 7A8 (V1). Low side to B-.	455KC (400%Mod)	BC	Tuning gang fully closed	Across voice coil of TV revr. speaker.	A1, A2, A3, A4	Adj ust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1630KC	"	Tuning gang fully open	"	A5	"
3.		Loop	1500KC	"	Tune to 1500KC signal	"	A6	Connect loop antenna of receiver to radio tuner. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	580KC	"	Tune to 580KC signal	"	A7	Adjust for maximum deflection.
5.	Repeat steps 3 and 4 for maximum output at high and low ends of band.							
6.		Loop	3200KC	SS	Tune to 3200KC signal	Across voice coil	A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1	Converter	7A8	7A8	8U	
V2	IF Amp.	6BA6	6BA6	7BK	
V3	Det-AVC-Phono Pre. Amp.	6AV6	6AV6	7BT	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	900	500								
C2	47		60-00475420	SI47	D6-470		GP1K-470	UC-5447	5GA-Q47	
C3	7.5		30-1224-65							
C4	5000		30-1238-1	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C5	.047	200		P288-047	DF-503	PTE4S47		PT4147	4TM-S47	
C6	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C7	5000		30-1238-1	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C8	5000		30-1238-1	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C9	.0047	600		P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C10	.1	400		489ZX-1		PJ4P1		PT401	4TM-P1	

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PHILCO PART No.	IRC PART No.	
R1	150KΩ	½		BTS-150K'	
R2	47KΩ	½		BTS-47K	
R3	33KΩ	½		BTS-33K	
R4	33KΩ	½		BTS-33K	
R5	150KΩ	½		BTS-150K	
R6	47KΩ	½		BTS-47K	
R7	2.2Meg	½		BTS-2.2Meg	
R8	470KΩ	½		BTS-470K	

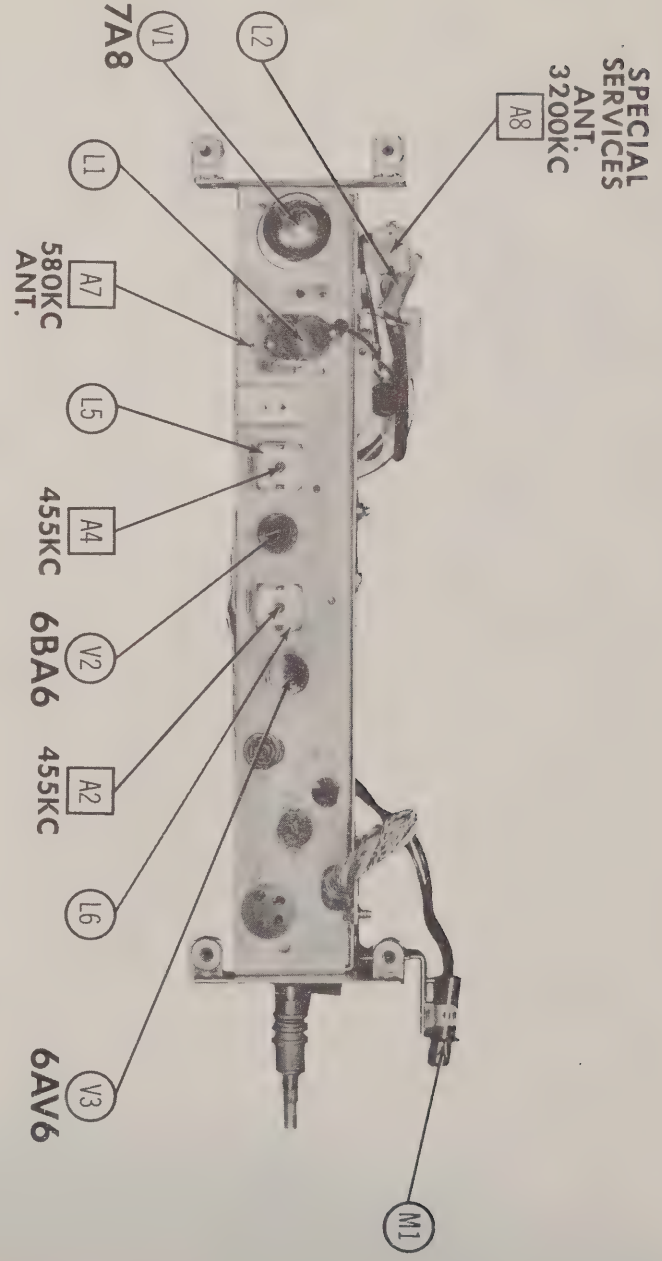
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PHILCO PART No.	IRC PART No.	
R9	2.2Meg	½		BTS-2.2Meg	
R10	10Meg	½		BTS-10Meg	
R11	82KΩ	½		BTS-82K	
R12	680KΩ	½		BTS-680K	
R13	3.3Ω	1			
R14	220KΩ	½		BTS-220K	
R15	10KΩ	5	33-1335-21	1 3/4A-10,000	
R16	.47Ω *				

* 54 inches of No. 26 copper-weld wire.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	BC Ant. Coil	.2Ω	2.4Ω	32-4519				
L2	SS Ant. Coil	1.7Ω		32-4561-5				
L3	BC Osc. Coil	1.8Ω	7Ω	32-4453-4	14-1040		71-Osc.	
L4	SS Osc. Coil	2.8Ω		32-4562-1				
L5	Input IF	15Ω	15Ω	32-4161A	16-6758	BC-352	12-C1	
L6	Output IF	15Ω	15Ω	32-4240-3A	16-6770	BC-355	12-C6	

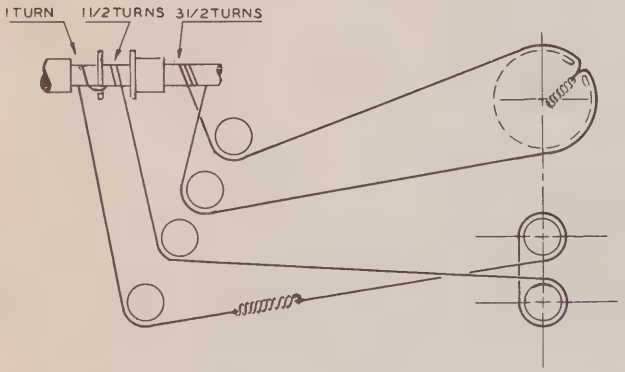
CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M1	Dial Light	34-2064	#44 Bayonet
M2	Tuning Cap.	31-2770	2 gang (25-467MMF, 16-160MMF)
M3	Switch	42-2016	Function (rotary)
A8	Trimmer Cap.	31-6473-29	SS Antenna Trimmer

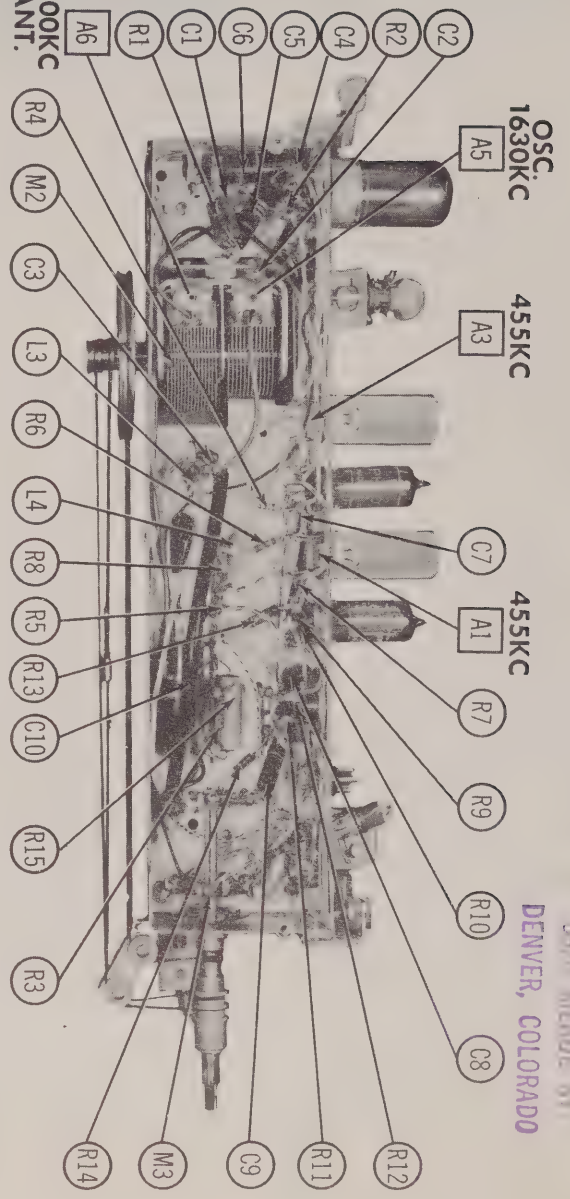


DIAL CORD STRINGING

SET 229 FOLDER 11

PHILCO MODEL RT-14

CHASSIS—BOTTOM VIEW



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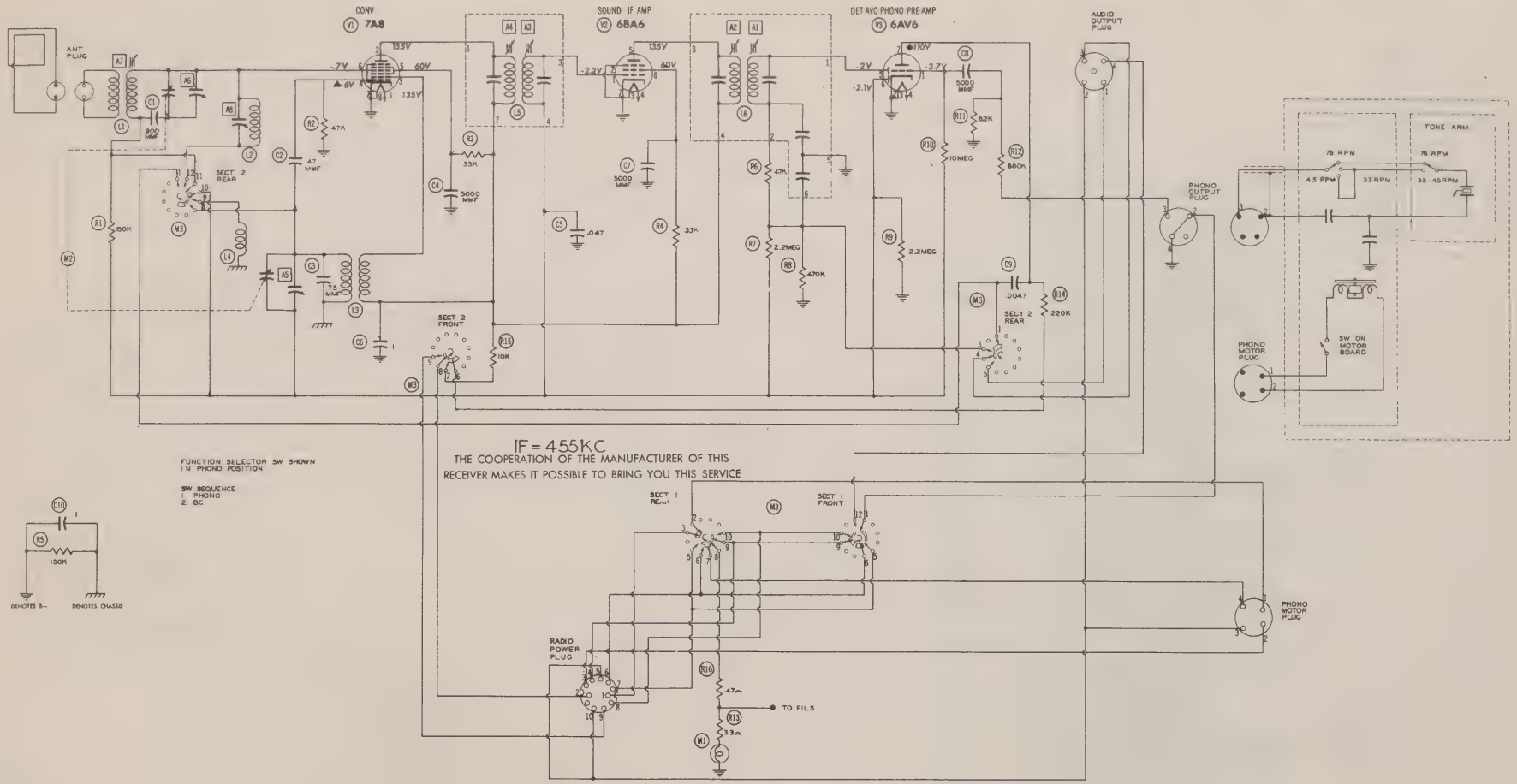
L. F. BLANKENSHIP
3[illegible] MEADE ST
DENVER, COLORADO

PHILCO MODEL RT-14



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	7A8	.1Ω	†10KΩ	†10KΩ	47KΩ	†43KΩ	2.7Meg	0Ω	0Ω
V 2	6BA6	2.7Meg	0Ω	0Ω	.1Ω	†10KΩ	†43KΩ	0Ω	
V 3	6AV6	10Meg	0Ω	0Ω	.1Ω	515KΩ	1.3Meg	♦†220KΩ	

▲ TAKEN WITH VACUUM TUBE VOLTMETER
♦MEASURED IN PHONO POSITION - ALL OTHERS IN BC POSITION
† MEASURED FROM PIN 2 OF POWER CABLE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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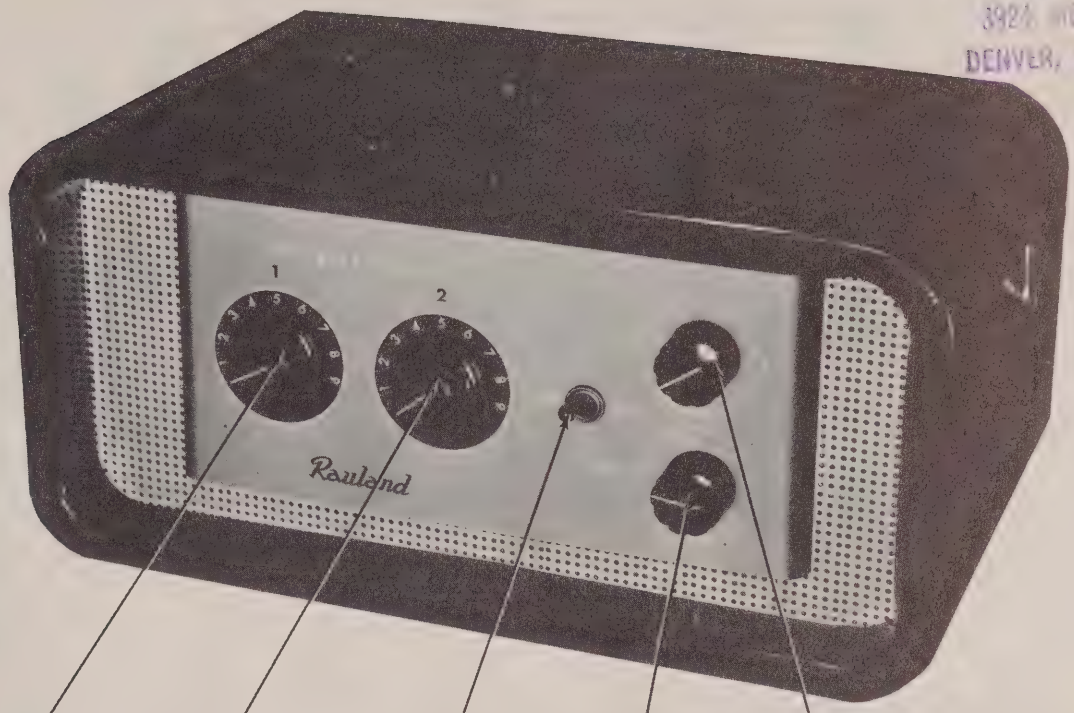
RAULAND MODEL 1916

PROPERTY OF
L. F. CLANKENSHIP
3924 NEMIE ST.
DENVER, COLORADO

RAULAND
MODEL 1916



MIKE 1 VOLUME CONTROL

MIKE 2 VOLUME CONTROL

ON-OFF SWITCH

TONE CONTROL

PHONO VOLUME CONTROL

RAULAND
MODEL 1916

TRADE NAME	Rauland Model 1916
MANUFACTURER	Rauland-Borg Corp., 3515 W. Addison St., Chicago 18, Ill.
TYPE SET	AC Operated Three Channel 16 watt Audio Amplifier
TUBES (Eight)	Types (2) 6SJ7 Mic Pre-Amp., 6SQ7 Phono Pre-Amp., 6SC7 AF Amp., (2) 6V6GT Audio Output, 5Y3GT Rectifier
POWER SUPPLY	117/130 Volts AC-60 Cycles RATING .55 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: RAULAND PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	1st Mic Pre Amp.	6SJ7	6SJ7	8N	
V2	2nd Mic Pre Amp.	6SJ7	6SJ7	8N	
V3	Phono Pre Amp.	6SQ7	6SQ7	8Q	
V4	AF Amp.	6SC7	6SC7	8S	
V5	Phase Inverter	6SC7	6SC7	8S	
V6	Audio Output	6V6GT	6V6GT	7S	
V7	Audio Output	6V6GT	6V6GT	7S	
V8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RAULAND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450		AFH4-17		DO16		FP476	R1442	
B	■10	450								
C	▲10	450								
D	10	450								
C2	40	25		PRS25/50		BR502A		TC29	TVA-1206	
C3	8	450		PRS450/8		BR845A		TC71	TVA-1704	
C4	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C5	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C6	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C7	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C8	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C9	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C10	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C11	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C12	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C13	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C14	.05	600		689ZX-05		PJ6S5		PT615	6TM-D5	

CONTROLS

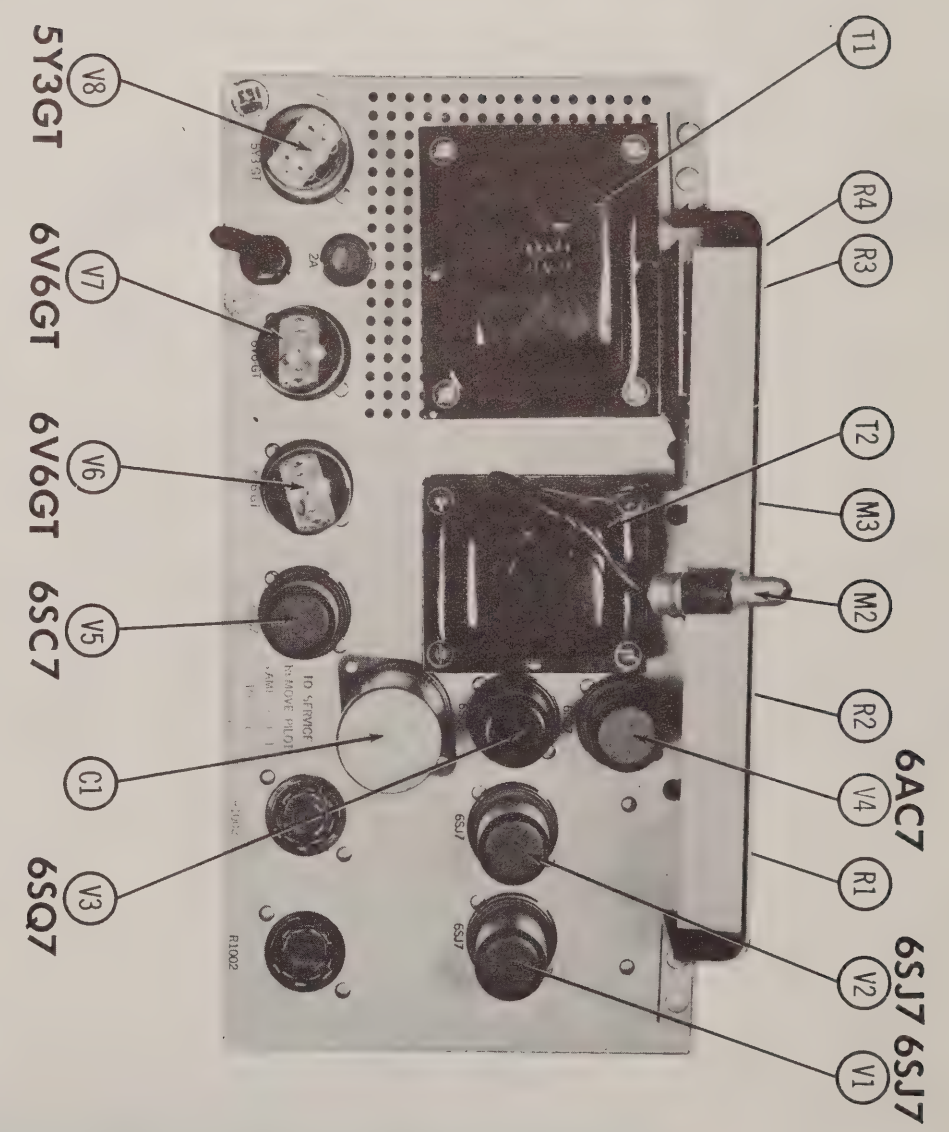
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RAULAND PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	RP-504B-D	Q13-133	AG-60-Z	BSK-60	U-48	Mike Volume #1
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
R2A	500KΩ	½	RP-504B-D	Q13-133	AG-60-Z	BSK-60	U-48	Mike Volume #2
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R2A
R3A	500KΩ	½	RP-504B-D	Q13-133	AG-60-Z	BSK-60	U-48	Phono Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R3A
R4A	500KΩ	½	RP-504B-D	Q13-133	AG-60-Z	BSK-60	U-48	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R4A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: RAULAND PART No.	IRC PART No.	NOTES
R5	10Meg	1		BTA-10Meg	
R6	470KΩ	1		BTA-470K	
R7	100KΩ	1		BTA-100K	
R8	10Meg	1		BTA-10Meg	
R9	470KΩ	1		BTA-470K	
R10	100KΩ	1		BTA-100K	
R11	68KΩ	2		BTB-68K	
R12	470Ω	½		BTS-470	
R13	10Ω	½		BTS-10	
R14	1000Ω	½		BTS-1000	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: RAULAND PART No.	IRC PART No.	NOTES
R15	6800Ω	½		BTS-6800	
R16	100KΩ	½		BTS-100K	
R17	100KΩ	½		BTS-100K	
R18	220KΩ	½		BTS-220K	
R19	220KΩ	½		BTS-220K	
R20	250Ω	10		1.3/4A-250	
R21	5600Ω	½		BTS-5600	
R22	1500Ω	½		BTS-1500	
R23	2200Ω	1		BTA-2200	
R24	10KΩ	1		BTA-10K	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	RAULAND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @.55A	670VCT .085ADC	5VAC @2A	6.3VCT @3.1A	LP-0168	PM-8410	P-2952	PH-90	R-11B

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		RAULAND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	10KΩ CT	500Ω tap @ 333(70V) 250Ω 16Ω 8Ω 4Ω	350Ω CT	10.8Ω tap @ 8.5Ω, 7Ω, .38Ω, .3Ω, .2Ω.	LO-0092-B					

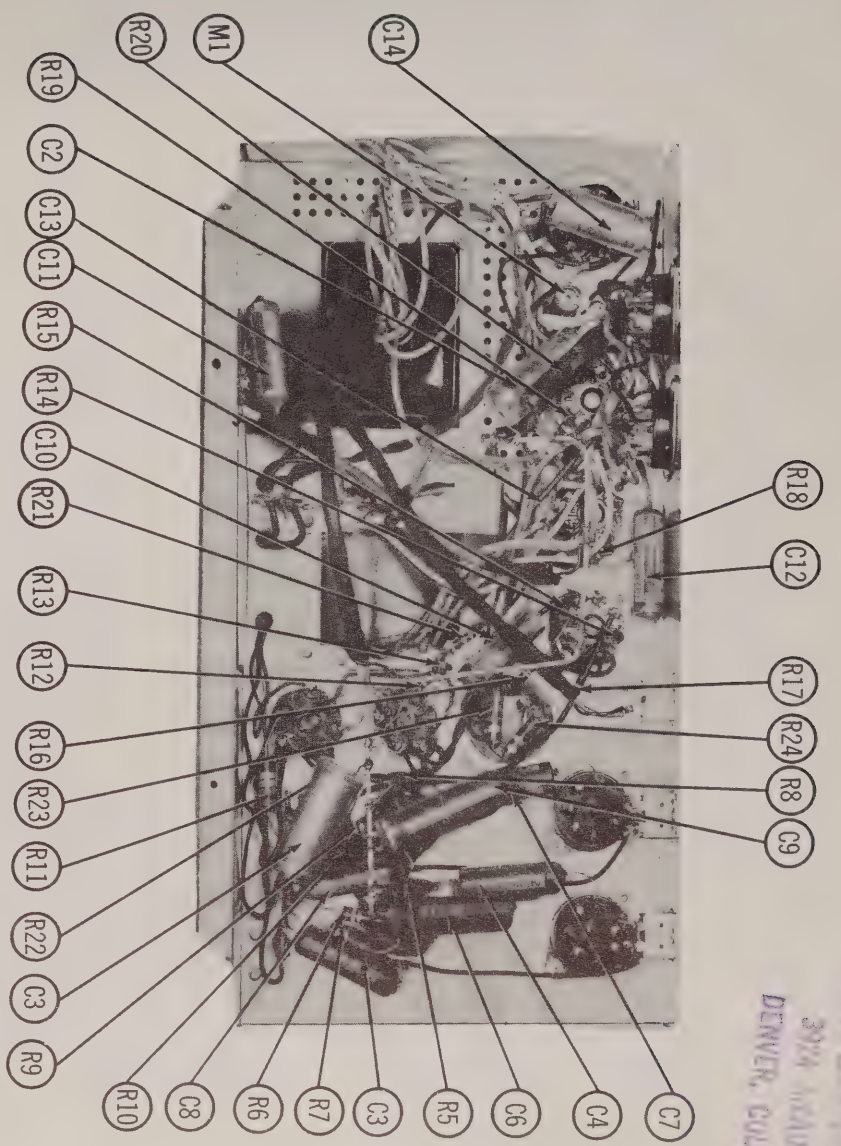
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			RAULAND PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A			312002 (3AG-2A)	341001	AGC2	HKP

MISCELLANEOUS

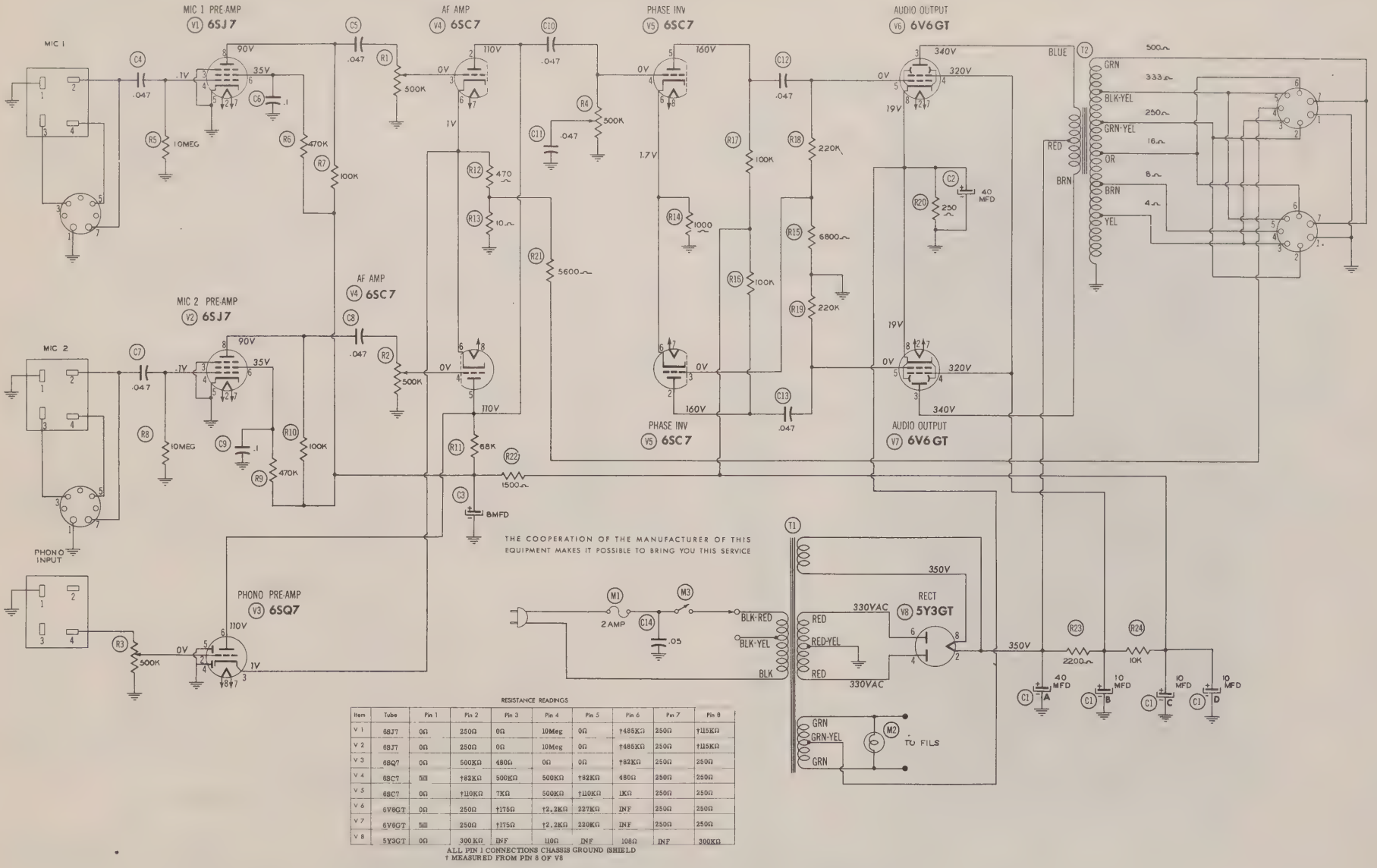
ITEM No.	PART NAME	RAULAND PART No.	NOTES
M2	Dial light		# 47 bayonet
M3	Switch		Off/on DPDT toggle

CHASSIS—BOTTOM VIEW



PROPERTY OF
L. F. ELECTRONICS
3924 MAIN ST.
DENVER, COLORADO

RAULAND MODEL 1916



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SJ7	0Ω	250Ω	0Ω	10Meg	0Ω	†485KΩ	250Ω	†115KΩ
V 2	6SJ7	0Ω	250Ω	0Ω	10Meg	0Ω	†485KΩ	250Ω	†115KΩ
V 3	6SQ7	0Ω	500KΩ	480Ω	0Ω	0Ω	†82KΩ	250Ω	250Ω
V 4	6SC7	[illegible]	†82KΩ	500KΩ	500KΩ	†82KΩ	480Ω	250Ω	250Ω
V 5	6SC7	0Ω	†110KΩ	7KΩ	500KΩ	†110KΩ	1KΩ	250Ω	250Ω
V 6	6V6GT	0Ω	250Ω	†175Ω	†2.2KΩ	227KΩ	INF	250Ω	250Ω
V 7	6V6GT	[illegible]	250Ω	†175Ω	†2.2KΩ	220KΩ	INF	250Ω	250Ω
V 8	5Y3GT	0Ω	300 KΩ	INF	110Ω	INF	108Ω	INF	300KΩ

ALL PIN 1 CONNECTIONS CHASSIS GROUND (SHIELD
† MEASURED FROM PIN 8 OF V8

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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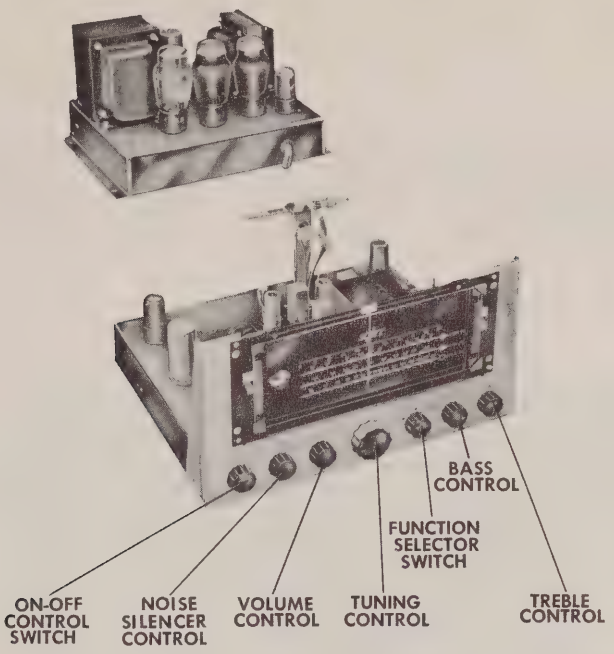
229-12

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

PROPERTY OF
L I
DENVER, COLORADO



TRADE NAME	Scott Model 2000
MANUFACTURER	John Meck Industries, Plymouth, Ind.
TYPE SET	AC Operated 3-Band AM Superheterodyne Receiver
TUBES	Fourteen

POWER SUPPLY 110-120 Volts AC-60 Cycles RATING 1.16 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST 535-1650KC SHORT WAVE Band 2 (2-6MC) Band 3 (6-20MC)

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. Turn tone controls for maximum treble and maximum bass.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 6 (grid) of 6C4 (V2). Low side to chassis.	455KC (400~Mod)	AM	1600KC	Across voice coil	A1, A2, A3, A4, A5, A6	Adjust for maximum output.
2.	"	High side to antenna terminal 1. Low side to chassis.	1000KC	"	1000KC	"	A7	"
3.	"	"	600KC	"	600KC	"	A8, A9 A10	Adjust in order given for maximum output
4.	"	"	1500KC	"	1500KC	"	A11, A12, A13	"
5.	Fig. 1	High side thru dummy to terminal 3. Low side to chassis.	2.2MC	2	2.2MC	"	A14, A15, A16	"
6.	"	"	6MC	"	6MC	"	A17, A18, A19	Adjust in order given for maximum output. Repeat adjustment of A18 and A19 until no improvement is noted.
7.	"	"	"	3	"	"	A20, A21 A22	Adjust in order given for maximum output. Repeat adjustment of A21 and A22 until no improvement is noted.
8.	"	"	16MC	"	16MC	"	A23	Adjust for maximum output .
9.	"	"	15MC	"	15MC	"	A24, A25	Adjust for maximum output. Repeat entire band 3 alignment until optimum results are obtained.

SCOTT
MODEL 2000

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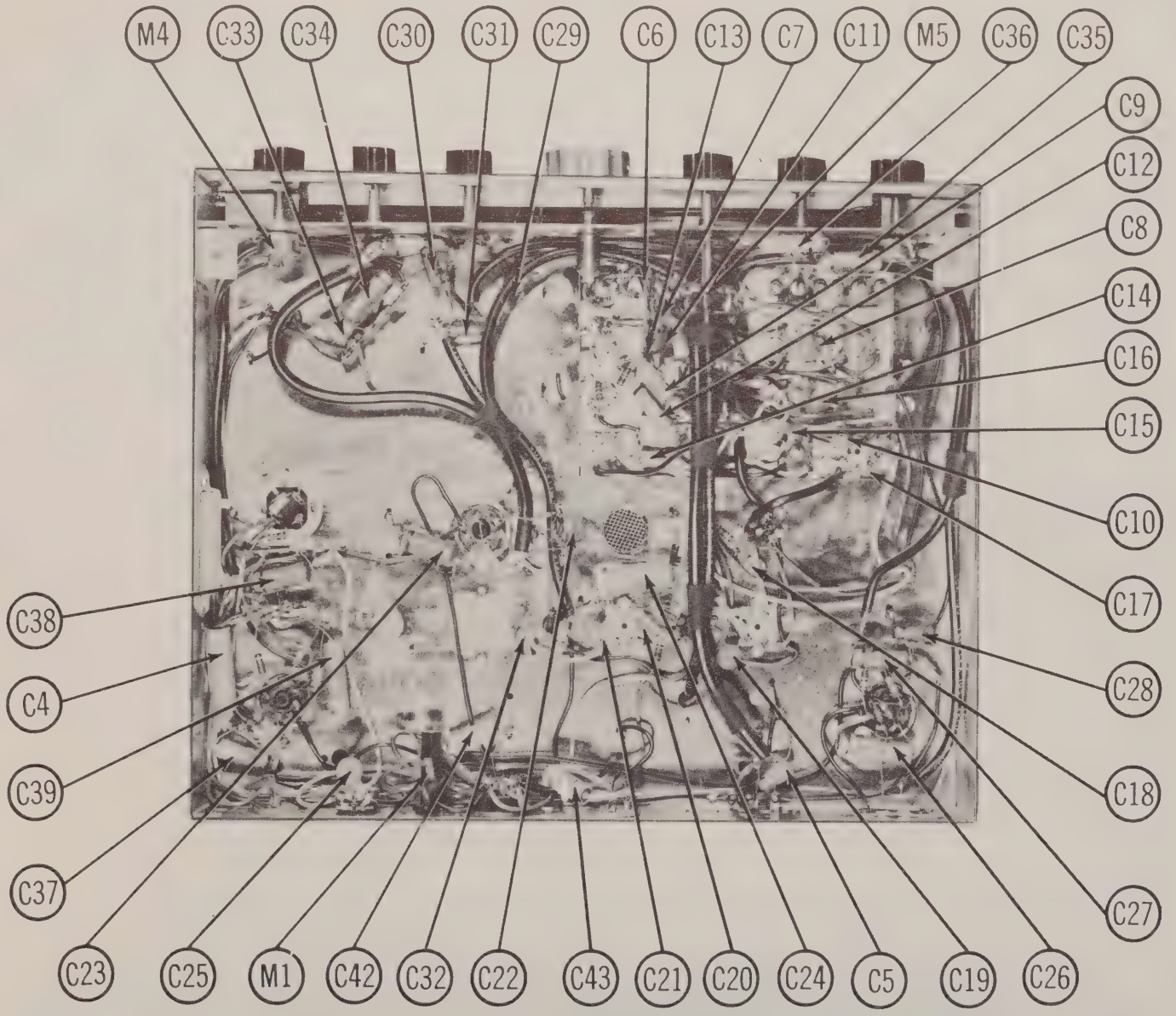
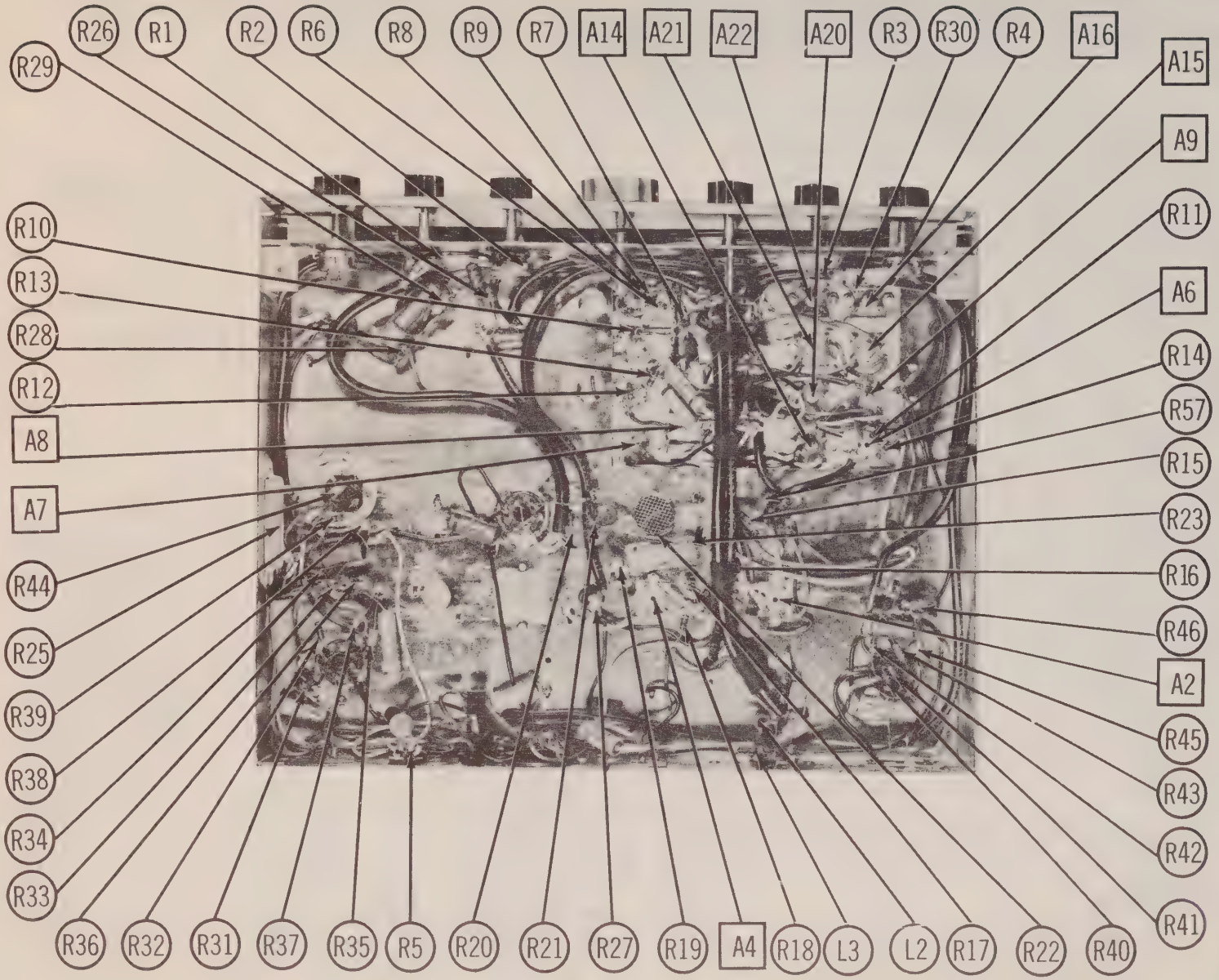


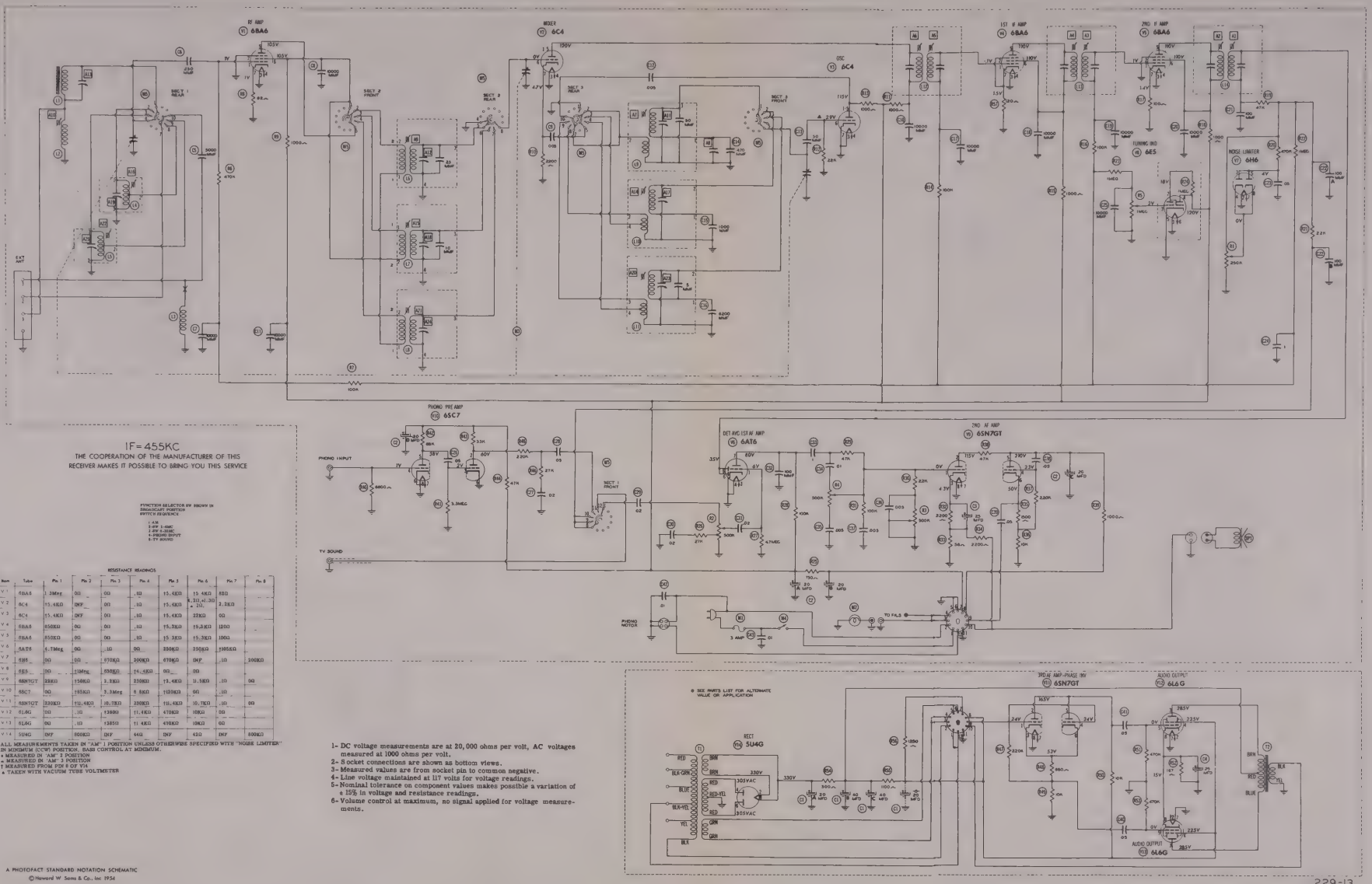
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PROPERTY OF
DENVER, COLORADO

SCOTT
MODEL 2000



IF = 455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

FUNCTION SELECTOR (IF SHOWN IN BROADCAST POSITION)
SWITCH FREQUENCY

1 AM
2 SW 1-6MC
3 SW 6-20MC
4 PHONO INPUT
5 TV SOUND

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	1.3Meg	0Ω	0Ω	1Ω	15.4KΩ	15.4KΩ	82Ω	
V 2	6C4	15.4KΩ	INF	0Ω	1Ω	15.4KΩ	8.2Ω,41.2Ω ▲ 20.	2.2KΩ	
V 3	6C4	15.4KΩ	INF	0Ω	1Ω	15.4KΩ	22KΩ	0Ω	
V 4	6BA6	850KΩ	0Ω	0Ω	1Ω	15.3KΩ	15.3KΩ	1250	
V 5	6BA6	850KΩ	0Ω	0Ω	1Ω	15.3KΩ	15.3KΩ	1060	
V 6	6AT6	4.7Meg	0Ω	1Ω	0Ω	250KΩ	250KΩ	1305KΩ	
V 7	6H6	0Ω	0Ω	870KΩ	300KΩ	670KΩ	INF	1Ω	300KΩ
V 8	6E5	0Ω	1.5Meg	830KΩ	14.6KΩ	0Ω	0Ω		
V 9	6SN7GT	23KΩ	150KΩ	3.3KΩ	230KΩ	13.4KΩ	11.5KΩ	1Ω	0Ω
V 10	6SC7	0Ω	195KΩ	3.3Meg	0 8KΩ	1120KΩ	0Ω	1Ω	
V 11	6SN7GT	230KΩ	11.4KΩ	10.7KΩ	230KΩ	11.4KΩ	10.7KΩ	1Ω	0Ω
V 12	6L6G	0Ω	1Ω	1380Ω	11.4KΩ	670KΩ	10KΩ	0Ω	
V 13	6L6G	0Ω	1Ω	1385Ω	11.4KΩ	670KΩ	10KΩ	0Ω	
V 14	5U4G	INF	850KΩ	INF	44Ω	INF	42Ω	INF	850KΩ

ALL MEASUREMENTS TAKEN IN "AM" 1 POSITION UNLESS OTHERWISE SPECIFIED WITH "NOISE LIMITER" IN MINIMUM (CCW) POSITION. BASS CONTROL AT MINIMUM.
▲ MEASURED IN "AM" 2 POSITION
◆ MEASURED IN "AM" 3 POSITION
† MEASURED FROM PIN 8 OF V4
▲ TAKEN WITH VACUUM TUBE VOLTMETER

1- DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2- 8 socket connections are shown as bottom views.
3- Measured values are from socket pin to common negative.
4- Line voltage maintained at 117 volts for voltage readings.
5- Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6- Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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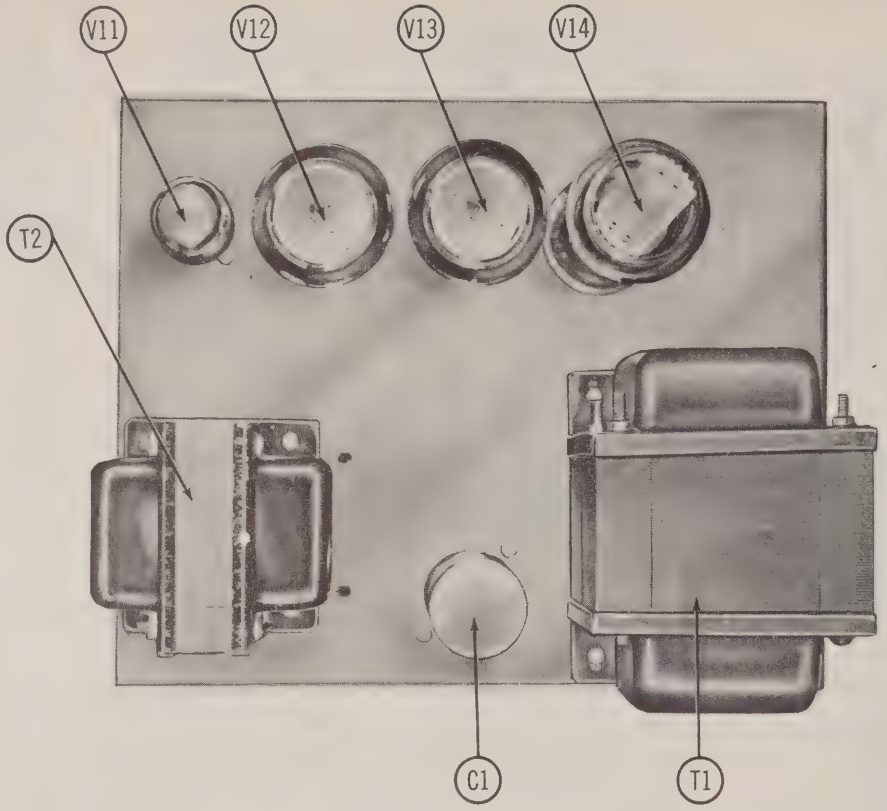
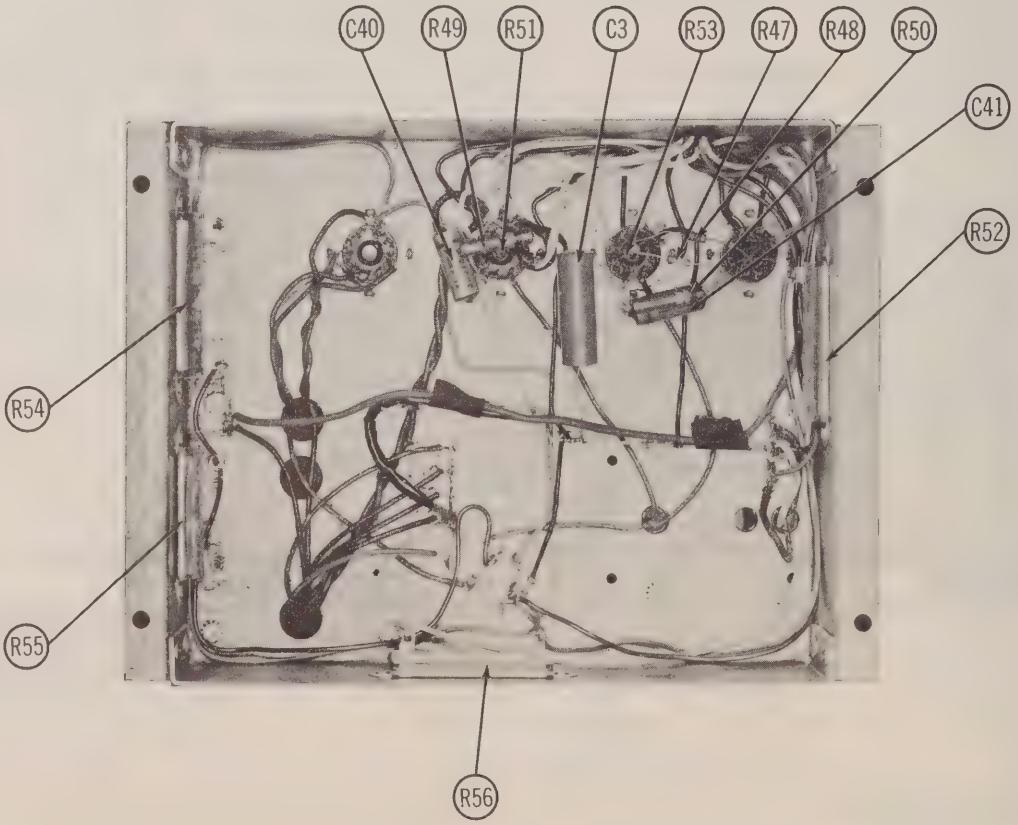


POWER SUPPLY CHASSIS-TOP VIEW



POWER SUPPLY CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

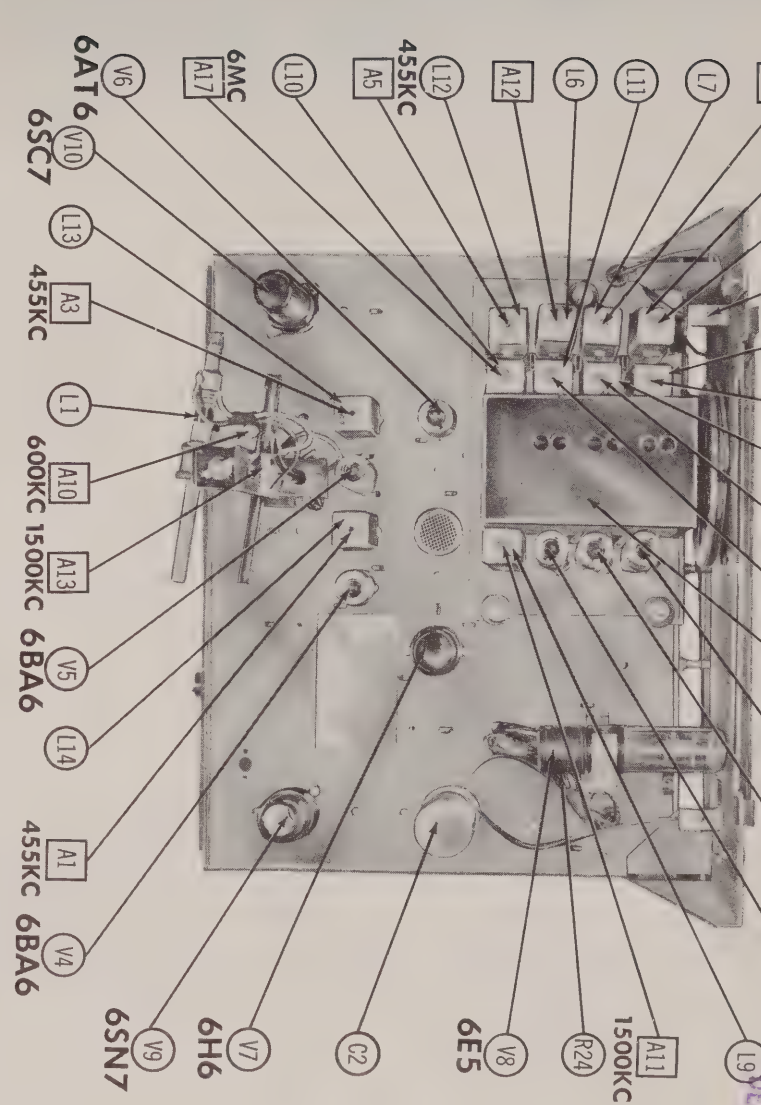
ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		SCOTT PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Mixer	6C4	6C4	6BG	
V3	Oscillator	6C4	6C4	6BG	
V4	1st IF Amplifier	6BA6	6BA6	7BK	
V5	2nd IF Amplifier	6BA6	6BA6	7BK	
V6	Detector-AVC-1st AF Amplifier	6AT6	6AT6	7BT	
V7	Noise limiter	6H6	6H6	7Q	
V8	Tuning indicator	6E5	6E5	6R	
V9	2nd AF Amplifier	6SN7GT	6SN7GT	8BD	
V10	Phono Pre. Amp.	6SC7	6SC7	8S	
V11	3rd AF Amplifier-Phase Inverter	6SN7GT	6SN7GT	8BD	
V12	Audio Output	6L6G	6L6G	7S	
V13	Audio Output	6L6G	6L6G	7S	
V14	Rectifier	5U4G	5U4G	5T	

CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SCOTT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■20	450		AFH4-79		BO45		FP447	TVL-2764	Note 1
B	▲40	450				BR2045A			TVA-1709	
C	▲40	450								
C2A	▲20	450								
B	■20	450	CLC-10071	AFH4-14		DOI3		FP444	TVL-4763	
C	▲20	450								
D	20	450								
C3	25	25	CLA-10026	PRS25/25		BR252A		TC26	TVA-1205	
C4	25	50		PRS50/25		BR255A		TC36	TVA-1306	
C5	5000	500	CM-15502	1467-005	D6-502	1D5D5	GP2-333-502	MC-465	MS-25	
C6	250	500	CM-15241A	1468-00025	D6-251	5W5T25	GP2K-251	UC-5325	MS-425	
C7	10000		CCA-15103	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C8	10000		CCA-15103	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C9	.005	600	CP-16502	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C10	10000		CCA-15103	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C11	10000		CCA-15103	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C12	.005	600	CP-16502	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C13	50		CC-15500B	SI50	D6-500	5W5Q5	GP1K-500	UC-545	5GA-Q5	
C14	470	500	CM-15471B	SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C15	1000	500	CM-15102B	1468-001	D6-102	1W5D1	GP2K-102	MC-255	MS-21	
C16	6200	500	CM-15622B							
C17	10000		CCA-15103	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C18	10000		CCA-15103	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C19	10000		CCA-15103	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C20	10000		CCA-15103	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK -S1	
C21	100		CCA-15101A	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C22A	100		CCX8-10005	BPD-01	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
B	100			BPD-01	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C23	.05	600	CP-16104	P688-05	DF-503	PTE6S5		PT615	6TM-S5	Note 2
C24	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C25	10000		CCA-15103	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C26	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C27	.02	600	CP-16203	P688-02	DD-203	PTE6D2		PT612	6TM-S2	
C28	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C29	.02	600	CP-16203	P688-02	DD-203	PTE6D2		PT612	6TM-S2	
C30	.02	600	CP-16203	P688-02	DD-203	PTE6D2		PT612	6TM-S2	
C31	.02	600	CP-16203	P688-02	DD-203	PTE6D2		PT612	6TM-S2	
C32	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C33	.1	600	CP-16503	P688-1	DF-104	PTE6P1		PT601	6TM-P1	Note 3
C34	.01	200	CP-16103	P488-01	D6-103	PTE4S1	811-01	PT411	4TM-S1	
C35	.005	600	CP-16502	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C36	.005	600	CP-16502	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C37	.005	600	CP-16502	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C38	.05	600	CP-16503	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C39	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C40	.05	600	CP-16503	P688-05	DF-503	PTE6D5		PT615	6TM-S5	
C41	.05	600	CP-16503	P688-05	DF-503	PTE6D5		PT615	6TM-S5	
C42	.01	600	CPMA-16103	689ZX-01				QT-101	PX-116	
C43	.01	600	CPMA-16103	689ZX-01				QT-101	PX-116	

Note 1. Some Models use a 20-20-20-20MFD @ 450V in this application.
Note 2. Some Models use a .1MFD @ 600V in this application.
Note 3. Some Models use a .05MFD @ 200V in this application..

CHASSIS—TOP VIEW



PROPERTY OF
L. F. CLANKENSHIP
MAIN MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SCOTT PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	250KΩ	½	VCA-12139	Q11-130	AG-55-S	B-50	U-46	Noise silence
B	Shaft		Not Req.	Not Req.	FS-3	Not, Req.	Not Req.	Attach to R1A
R2A	500KΩ	½	70V4583	Q18-133X	AT-88	BT-66	UT-429	Volume-tapped ⓐ 50KΩ
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	500KΩ	½	VCA-11111	Q11-133	AG-58-S	B-59	U-50	Bass
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A
R4A	500KΩ	½	VCA-11111	Q11-133	AG-58-S	B-59	U-50	Treble
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R4A
R5A	1Meg	½	70Y5241	Q11-137	AG-61-S	AB-69	SU-54	Tuning eye
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R5A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SCOTT PART No.	IRC PART No.	
R6	470KΩ	½	RC-34703A	BTS-470K	
R7	100KΩ	½	RC-31003A	BTS-100K	
R8	82Ω	½	RC-30820A	BTS-82	
R9	1000Ω	½	RC-31001A	BTS-1000	
R10	2200Ω	½	RC-32201A	BTS-2200	
R11	1000Ω	½	RC-31001A	BTS-1000	
R12	22KΩ	½	RC-32202A	BTS-22K	
R13	1000Ω	½	RC-31001A	BTS-1000	
R14	100KΩ	½	RC-31003A	BTS-100K	
R15	1000Ω	½	RC-31001A	BTS-1000	
R16	100KΩ	½	RC-31003A	BTS-100K	
R17	100Ω	½	RC-30100A	BTS-100	
R18	1000Ω	½	RC-31001A	BTS-1000	
R19	47KΩ	½	RC-34702A	BTS-47K	
R20	470KΩ	½	RC-34703A	BTS-470K	
R21	22KΩ	½	RC-32202A	BTS-22K	
R22	1Meg	½	RC-31004A	BTS-1Meg	
R23	1Meg	½	RC-31004A	BTS-1Meg	
R24	1Meg	½	RC-31004A	BTS-1Meg	
R25	750Ω	10		1 3/4A-750	
R26	27KΩ	½	RC-32702A	BTS-27K	
R27	4.7Meg	½	RC-34704A	BTS-4.7Meg	
R28	100KΩ	½	RC-31003A	BTS-100K	
R29	47KΩ	½	RC-34702A	BTS-47K	
R30	22KΩ	½	RC-32202A	BTS-22K	
R31	100KΩ	½	RC-31003A	BTS-100K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SCOTT PART No.	IRC PART No.	
R32	2200Ω	½	RC-32201A	BTS-2200	
R33	56Ω	½	RC-30560A	BTS-56	
R34	2200Ω	½	RC-32201A	BTS-2200	
R35	1500Ω	1	RC-31501A	BTA-1500	
R36	10KΩ	½	RC-31002A	BTS-10K	
R37	220KΩ	½	RC-32203A	BTS-220K	
R38	47KΩ	½	RC-34702A	BTS-47K	
R39	1000Ω	½	RC-31001A	BTS-1000	
R40	6800Ω	½	RC-36801A	BTS-6800	
R41	3.3Meg	½	RC-33304A	BTS-3.3Meg	
R42	68KΩ	½	RC-36802A	BTS-68K	
R43	33KΩ	½	RC-33302A	BTS-33K	
R44	47KΩ	½	RC-34702A	BTS-47K	
R45	220KΩ	½	RC-32203A	BTS-220K	
R46	27KΩ	½	RC-32702A	BTS-27K	
R47	220KΩ	½	RC-32203A	BTS-220K	
R48	680Ω	½		BTS-680	
R49	10KΩ	2		BTB-10K	
R50	10KΩ	2		BTB-10K	
R51	470KΩ	½	RC-34703A	BTS-470K	
R52	167Ω	5			
R53	470KΩ	½	RC-34703A	BTS-470K	
R54	300Ω	10		1 3/4A-300	
R55	1100Ω	5		1 3/4A-1100	
R56	1250Ω	5		1 3/4A-1250	
R57	120Ω	½		BTS-120	Note

Note: Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	SCOTT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC ⓐ1.16A taps for 250V 210V 150V 105V	615VCT .145ADC	5VAC ⓐ 3A	6.3VAC ⓐ5.6A	TPC-10017				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		SCOTT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	4.5KΩ CT	16Ω	164Ω CT	.57Ω	TOC-10060	A-8053 ①	A-3100 ①②	PCO-80 ①	S-35A ①	① Drill new mounting holes. ② Use high taps on primary.

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	SCOTT PART No.	JENSEN PART No.	QUAM PART No.	
SP1	15" (Coaxial)	PM	16Ω		ST-830 Mod. K-310	15A10CO	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SCOTT PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	BC Ant Coil	.4Ω		ALA-10033				Band 1 (.54-1.6MC)
L2	BC Ant. Loading Coil	.3Ω		LVA-10002				Band 1 (.54-1.6MC)
L3	RF Choke	7.5Ω			19-3125		4644	126 Microhenries
L4	SW Ant. Coil	1Ω (tapped ⓐ .3Ω)		TRFA-10038				Band 2 (2-6MC)
L5	SW Ant. Coil	.4ΩCT		TRFA-10039				Band 3 (5.5-20MC)
L6	BC RF Coil	130Ω	4.2Ω	TRFA-10035				Band 1
L7	SW RF Coil	.7Ω	1.3Ω	TRFA-10036				Band 2
L8	SW RF Coil	2.5Ω	.2Ω	TRFA-10037				Band 3
L9	BC Osc. Coil	.3Ω	2.7Ω	TRCA-10027				Band 1, includes 30MMF Cap.
L10	SW Osc. Coil	.3Ω	.8Ω	TRCA-10028				Band 2 (Pri. tapped ⓐ .2Ω)
L11	SW Osc. Coil	.4Ω tap ⓐ .3Ω	.2Ω	TRAC-10029				Band 3, includes 5MMF Cap.
L12	1st. IF Trans.	13Ω	13Ω	TSA-10059	16-6758 *	BC-352	12-C1 *	
L13	2nd. IF Trans.	9.5Ω	9.5Ω	TSA-10059	16-6758 *	BC-353	12-C2 *	
L14	3rd. IF Trans.	8Ω	8Ω	TSA-10059	16-6758 *	BC-353	12-C2 *	

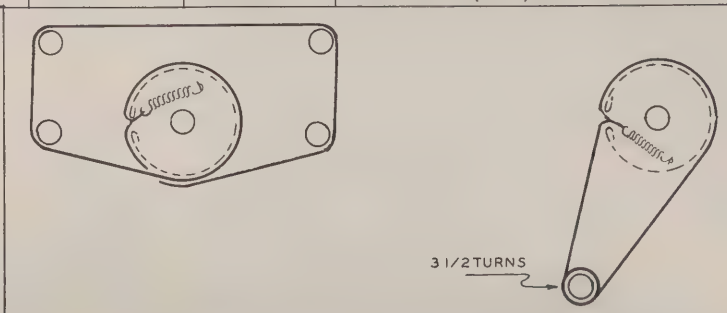
* Drill one new mounting hole and use adaptor plate.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			SCOTT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3 Amp. 250V			312003 (3AG-3 Amp.)	341001	AGC 3	HKP

MISCELLANEOUS

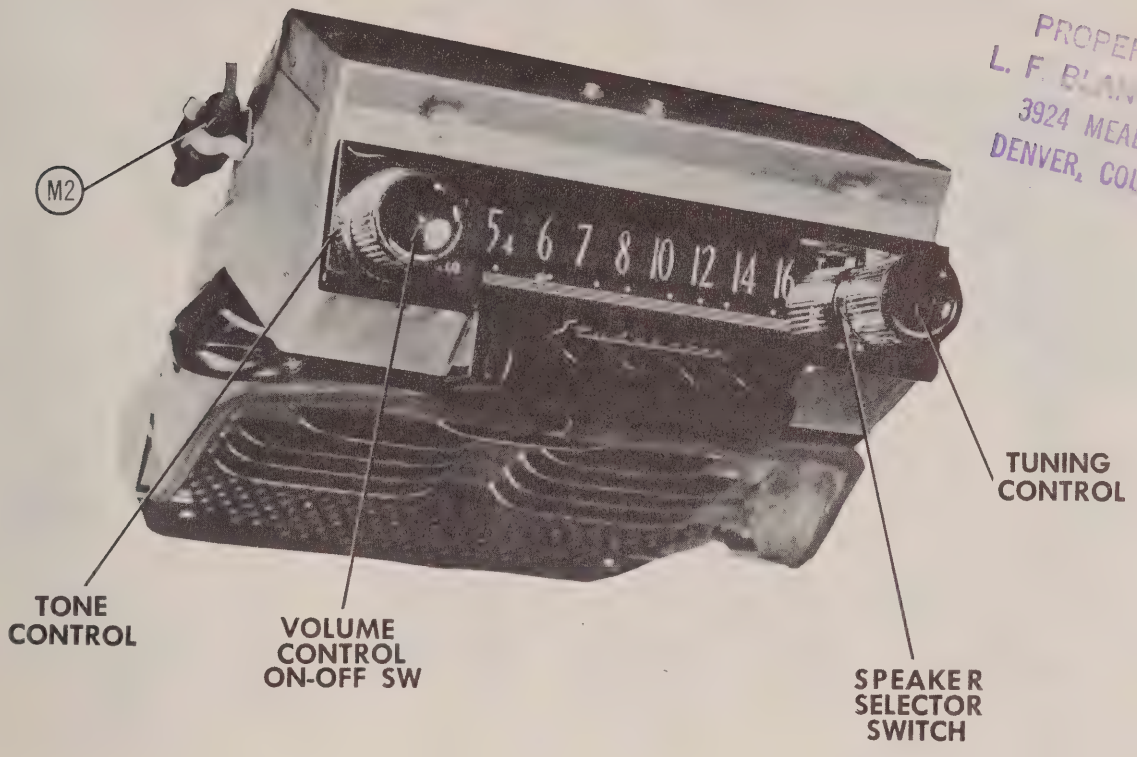
ITEM No.	PART NAME	SCOTT PART No.	NOTES
M2	Dial Light		Type #47 (2 used)
M3	Tuning Cap.	CVB-10027	19-497MMF, 19-497MMF, 19-497MMF
M4	Switch		Off/on
M5	Switch		Function Selector
	Dial Glass	DSB-10121	
	Knob	KA-10130	Tuning
	Knob	KA-10131A	Off/on, Noise limiter, Volume, Function Selector, Bass and treble (6 used)



DIAL CORD STRINGING

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

STUDEBAKER
MODEL AC-2300 (S-5327)



STUDEBAKER
MODEL AC-2300 (S-5327)

TRADE NAME	Studebaker Model AC-2300 (Philco Model S-5327) For 1953 Studebaker Automobiles
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	Battery Operated Custom Built Automobile Superheterodyne Receiver
TUBES (Eight)	Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AV6 Amp., 6AV6 Det.-AVC-AF Amp., 6C4 Phase Inv., (2) 6AQ5 Audio Output, 6X4 Rectifier
POWER SUPPLY	6 Volt Storage Battery RATING 5.6 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	535-1605KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455KC (400~Mod)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum deflection.
2.	40MMF	High side to antenna receptacle. Low side to chassis.	1605KC	"	"	A5	"
3.	"	"	1400KC	tune to 1400KC signal	"	A6, A7	"
4.	With set installed in car and antenna fully extended tune in a weak station between 600 and 1000KC and adjust A7 for maximum volume.						

To set push buttons tune manually to desired station and pull push button out and then press push button all the way in. Repeat procedure for remaining push buttons.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1954 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		STUDEBAKER PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det-AVC-AF Amp.	6AV6	6AV6	7BT	
V5	Phase Inverter	6C4	6C4	6BG	
V6	Audio Output	6AQ5	6AQ5	7BZ	
V7	Audio Output	6AQ5	6AQ5	7BZ	
V8	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Studebaker PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■20	350	61-0086	AFN3-106		CO78			TVL-3634	
B	▲10	350								
C	20	25								
C2	10	500	60-00105417	1468-00001	D6-100	5W5Q1	GP1K-100	MC215	1FM-41	
C3	.047	200	30-4650-45	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C4	10	500	60-00105417	1469-00001		5W5Q1	GP1K-100	MC-215	1FM-41	
C5	60		30-1224-110	SI60	D6-600		GP1K-600			
C6	65		30-1224-87							
C7	.047	200	30-4650-45	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C8	.0047	400	30-4650-56	P488-0047	D6-502	PTE6D47	GP2-333-472	PT4247	4TM-D47	
C9	100		62-110001021	SI100	D6-102	TM5T1	GP1K-101	UC-531	5GA-T1	
C10	.1	400	30-4650-41	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C11	.25	400	30-4650-49	P488-25		PTE4P25		PT4025	4TM-P25	
C12	.01	400	30-4650-41	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S5	
C13	330		62-133001001	SI330	D6-331		GP2L-331	UC-5333	5GA-T33	
C14	.0047	400	30-4650-56	P488-0047	D6-472	PTE6D47	GP2-333-472	PT4247	4TM-D47	
C15	.01	400	30-4650-41	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C16	.01	400	30-4650-41	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C17	.0068	1000	30-4650-91	P1088-0068		PTE6D68			MB-D68	
C18	.5	100	61-0183	VHC-36		MP2P5		RF-480	HC-3	
C19	.5	100	61-0183	VHC-36		MP2P5		RF-480	HC-3	
C20	330		62-133001001	SI330	D6-331		GP2L-331	UC-5333	5GA-T33	
C21	330		62-133001001	SI330	D6-331		GP2L-331	UC-5333	5GA-T33	
C22	.0068	1600	30-4661-8	P1688-0068		PTE16D68			MD-D68	

CONTROLS

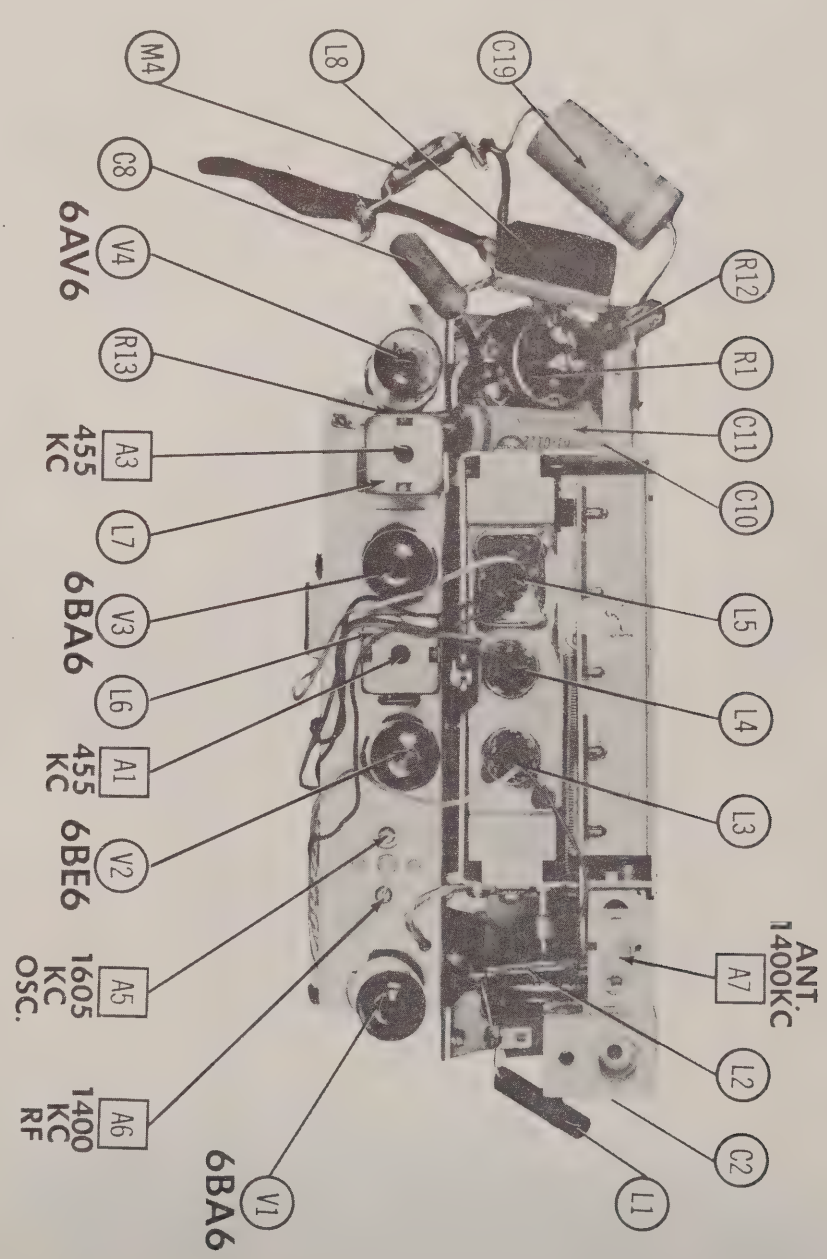
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	STUDEBAKER PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1	350K	½	33-5570					Tone SW, volume & switch

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	STUDEBAKER PART No.	IRC PART No.	
R2	330Ω	½	66-1338340	BTS-330	
R3	68KΩ	½	66-3688340	BTS-68K	
R4	10KΩ	½	66-3108340	BTS-10K	
R5	22KΩ	½	66-3228340	BTS-22K	
R6	27KΩ	1	66-3274340	BTA-27K	
R7	330Ω	½	66-1338340	BTS-330	
R8	1Meg	½	66-5108340	BTS-1Meg	
R9	22KΩ	½	66-3228340	BTS-22K	
R10	15Meg	½	66-6158340	BTS-15Meg	
R11	220KΩ	½	66-4228340	BTS-220K	
R12	2200Ω	½	66-2228340	BTS-2200	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	STUDEBAKER PART No.	IRC PART No.	
R13	180Ω	½	66-1188340	BTS-180	
R14	15Meg	½	66-6158340	BTS-15Meg	
R15	220KΩ	½	66-4228340	BTS-220K	
R16	220KΩ	½	66-4228340	BTS-220K	
R17	470KΩ	½	66-4478340	BTS-470K	
R18	330Ω	1	66-1334340	BTA-330	
R19	470KΩ	½	66-4478340	BTS-470K	
R20	1000Ω	1	66-2104340	BTA-1000	
R21	100Ω	1	66-1104340	BTA-100	
R22	100Ω	1	66-1104340	BTA-100	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	STUDEBAKER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	6.3VCT @ 3.1A	348VCT .040A			32-8313-3 32-8313-1 ①				

① Alternate power trans. .

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		STUDEBAKER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	9.2KΩ	3.1Ω	440Ω	.3Ω	32-8316-8 32-8316-7 ①		A2998			① Alternate audio output.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	STUDEBAKER PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6"X9"	PM	3.1Ω	36-1631-2	ST-810 Mod P69-V	69A2	

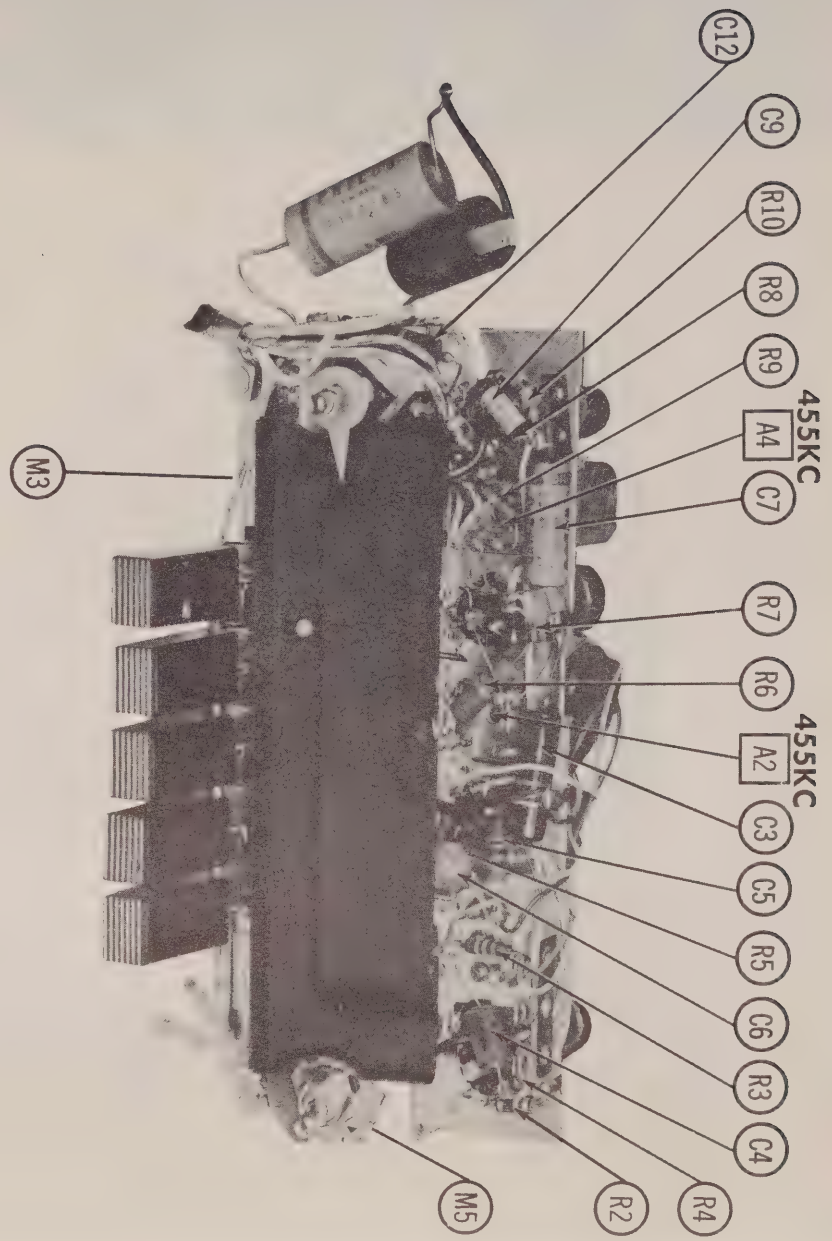
COILS (RF-IF)

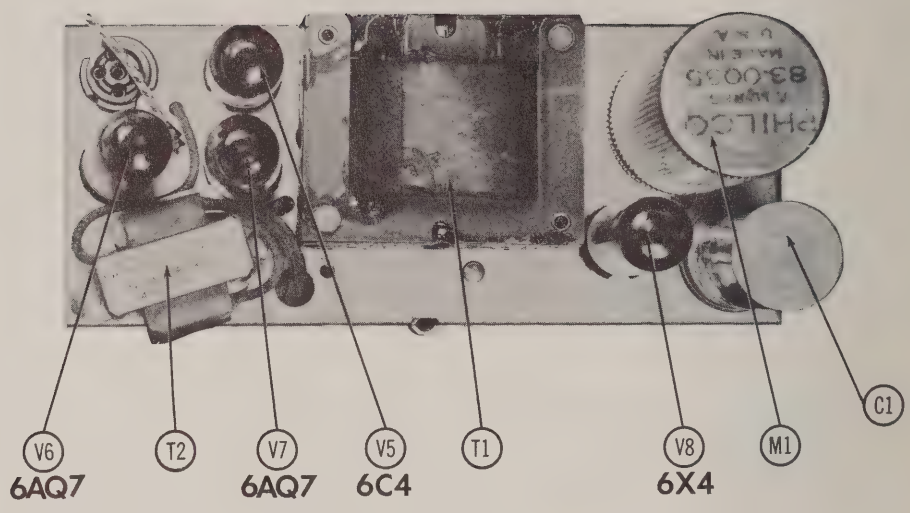
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	STUDEBAKER PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Loading Coil	4Ω		32-4422-24			4610	5.6Microhenries; IRC Part #CL-1
L2	RF Coupling	.7Ω		65-0378			4612	11 Microhenries
L3	Ant. Coil	13Ω		32-4586				Less core; core Part # 28-9336; complete Tuning unit assembly Part # 76-7856
L4	RF Coil	13Ω		32-4585				Less core; core Part # 28-9336
L5	Osc. Coil	2.8Ω tap @ .9Ω		32-4587				Less core; core Part # 28-9336
L6	Input IF	13Ω	13Ω	32-4160A	16-6758	BC-352	12-C1	
L7	Output IF	15Ω	15Ω	32-4240A	16-6770	BC-355	12-C6	
L8	Fil. Choke	0Ω		32-1644				
L9	Vibrator Hash Choke	0Ω		32-4170-4				.2 Microhenry

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				STUDEBAKER PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Int.	6.3V	115∿	83-0035	5326	859	5326	

CHASSIS—BOTTOM VIEW





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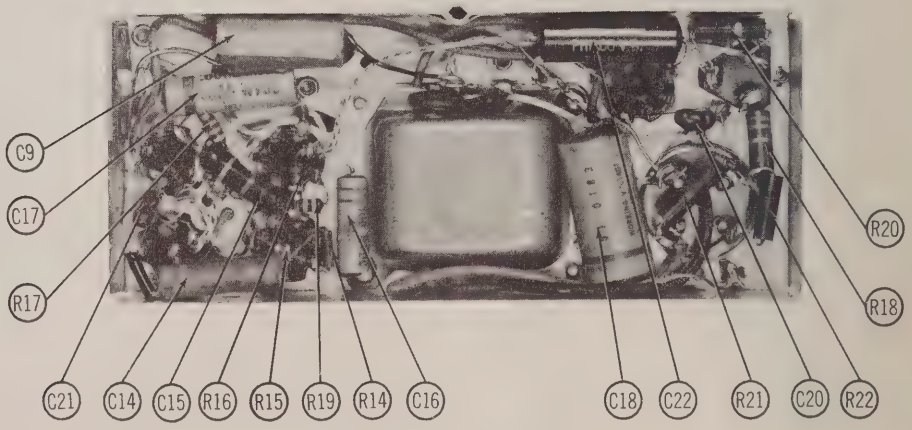

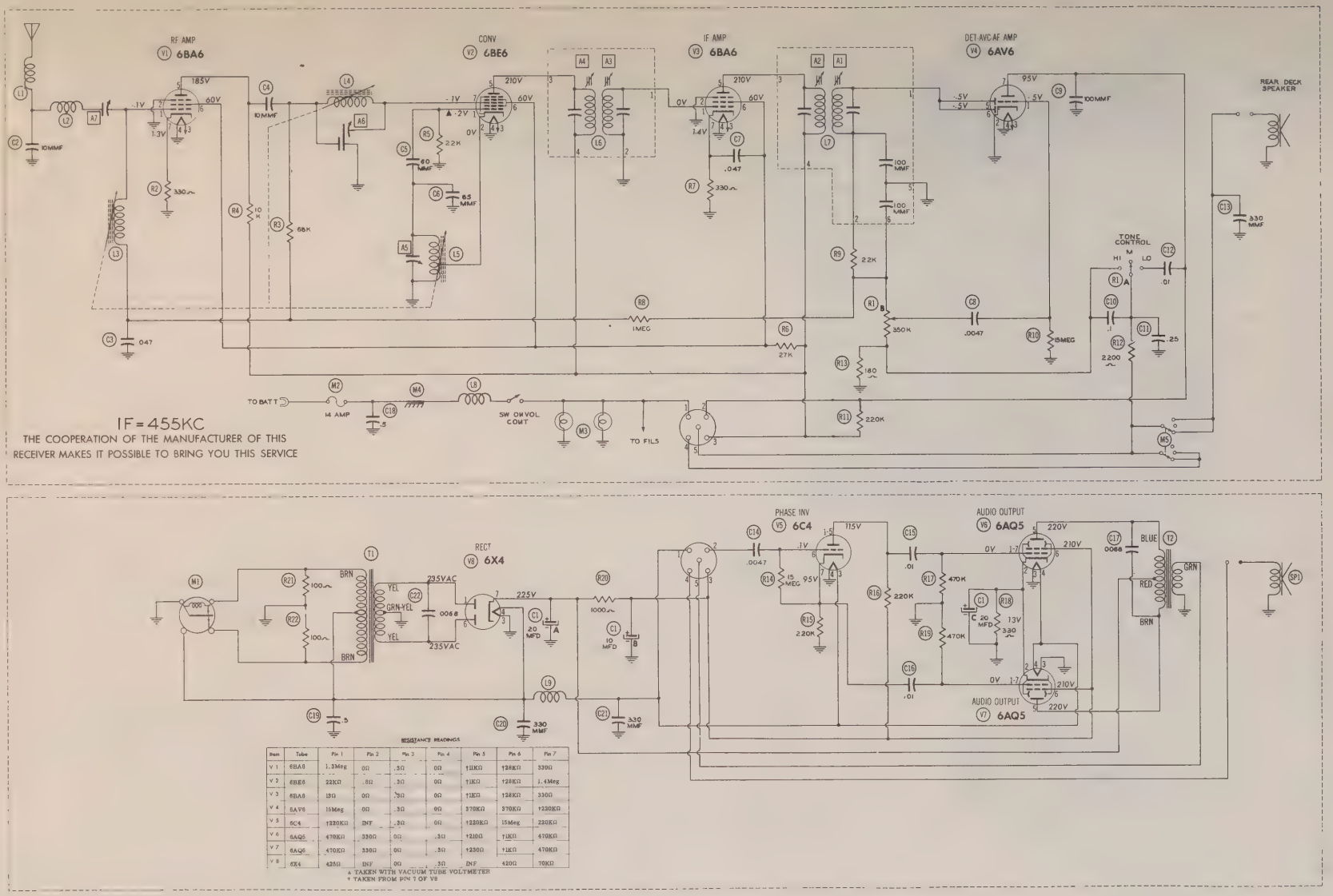

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	1.3Meg	0Ω	.3Ω	0Ω	†1MΩ	†28KΩ	330Ω
V 2	6BE6	22KΩ	.8Ω	.3Ω	0Ω	†1KΩ	†28KΩ	1.4Meg
V 3	6BA6	1MΩ	0Ω	.3Ω	0Ω	†1KΩ	†28KΩ	330Ω
V 4	6AV6	1.5Meg	0Ω	.3Ω	0Ω	370KΩ	370KΩ	†230KΩ
V 5	6C4	†220KΩ	INF	.3Ω	0Ω	†220KΩ	1.5Meg	220KΩ
V 6	6AQ5	470KΩ	330Ω	0Ω	.3Ω	†210Ω	†1KΩ	470KΩ
V 7	6AQ5	470KΩ	330Ω	0Ω	.3Ω	†230Ω	†1KΩ	470KΩ
V 8	6X4	425Ω	INF	0Ω	.3Ω	INF	420Ω	70KΩ

A TAKEN WITH VACUUM TUBE VOLTMETER
† TAKEN FROM PIN 7 OF V8

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1 - DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			STUDEBAKER PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A	45-2559	56-3807-4	307014 (SFE-14A)	155014	SFE-14	HDI

DIAL LIGHTS

ITEM No.	PART NAME	STUDEBAKER PART No.	NOTES
M3	Dial Light	34-6024	2 Used (#44)

MISCELLANEOUS

ITEM No.	PART NAME	STUDEBAKER PART No.	NOTES
M4	Spark plate	30-1235-1	
M5	Switch	42-2000	Rear seat speaker
A5, A6	Trimmer cap	31-6522-4	Osc. and RF Adj. -dual
A7	Trimmer cap	31-6502-3	Antenna Adj.
	Back cover	56-9920	
	Dial glass	54-5153	
	Knob	27-4687-20	Off-on volume and tuning (2 used)
	Knob	54-4995	Push button (5 used)
	Knob	56-9860	Tone and rear speaker (2 used)
	Rear Speaker Kit	41-4172	Includes speaker, cable and hardware

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373, 375, 376, 377 Series (Ch. 1-518-1, -2, -3)

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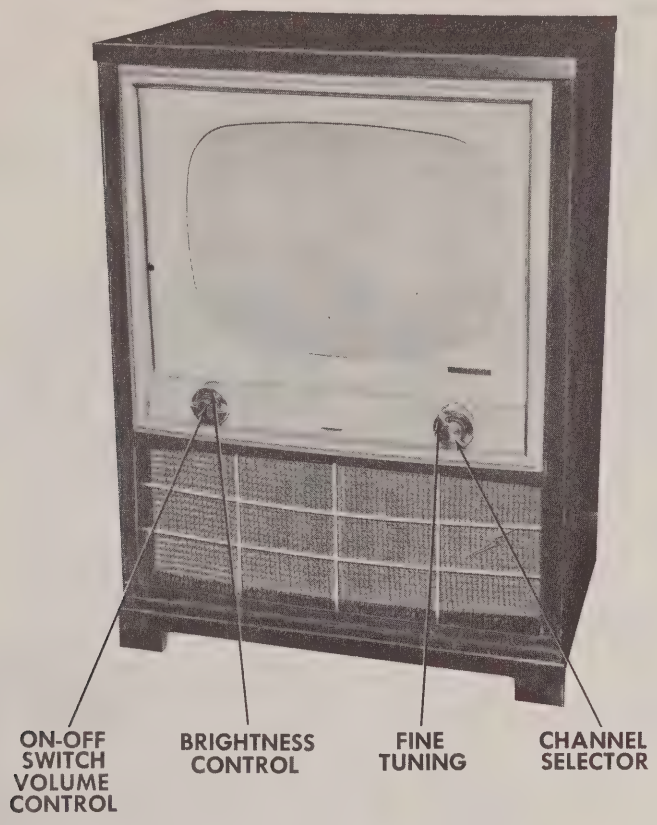

SYLVANIA MODEL 376 (Ch. 1-318-3)

TRADE NAME	Sylvania Models 175-18, 372, 373, 375, 376, 377Series (Ch. 1-518-1 Code C03, Ch. 1-518-2 Codes C03 thru C08, Ch. 1-518-3 Codes C03 thru C09)
MANUFACTURER	Sylvania Electric Prod., Inc., Radio and Television Div., 254 Rano St., Buffalo, N. Y.
TYPE SET	Television Receiver
TUBES	Twenty-Six
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 2.18Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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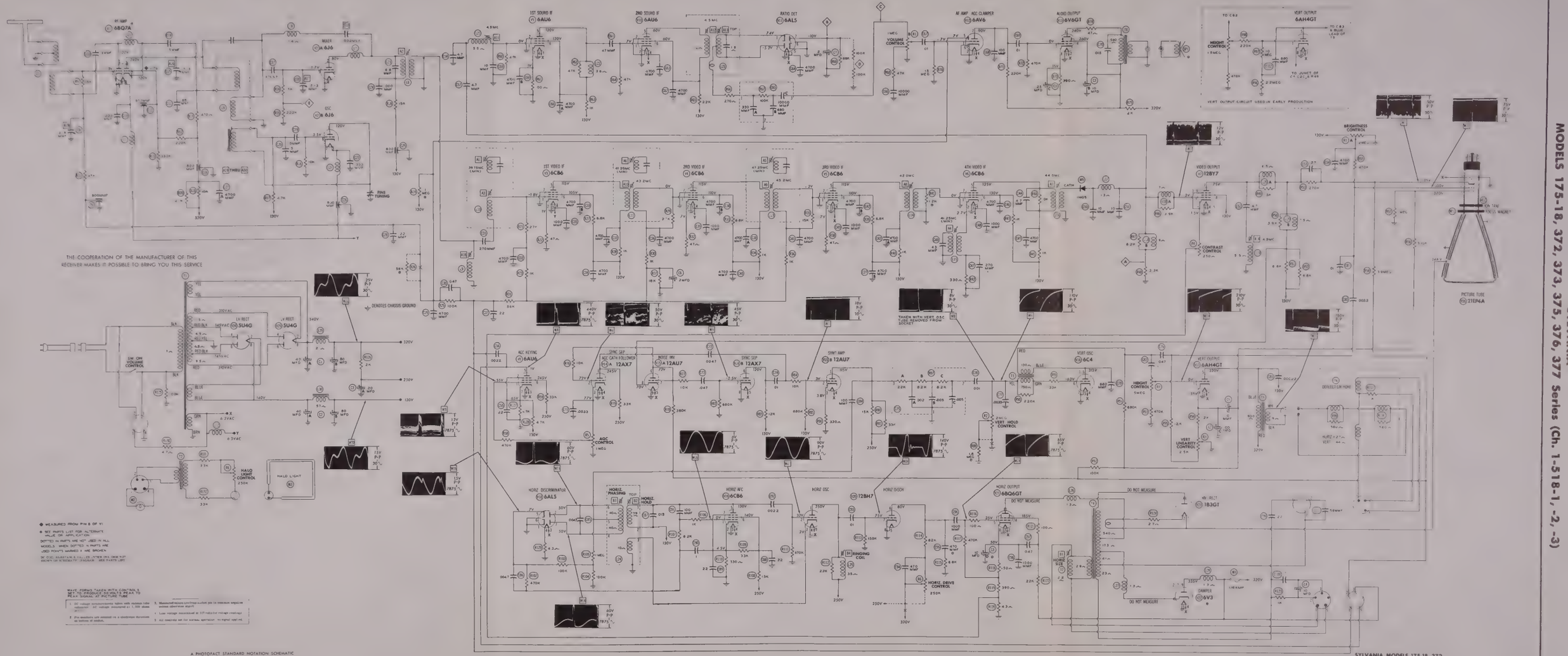
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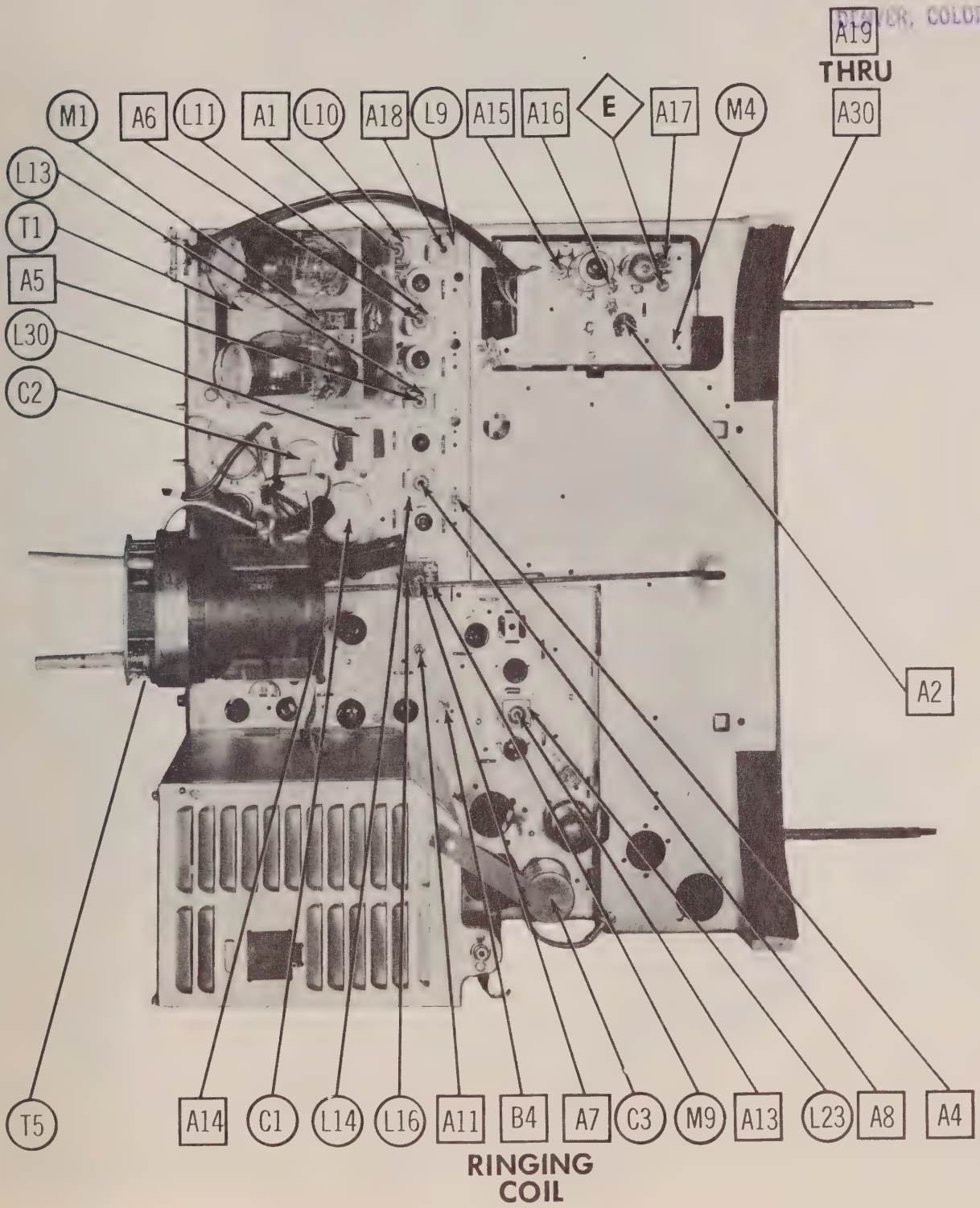

For tube location see
Tube Placement chart page 10.

CHASSIS TOP VIEW

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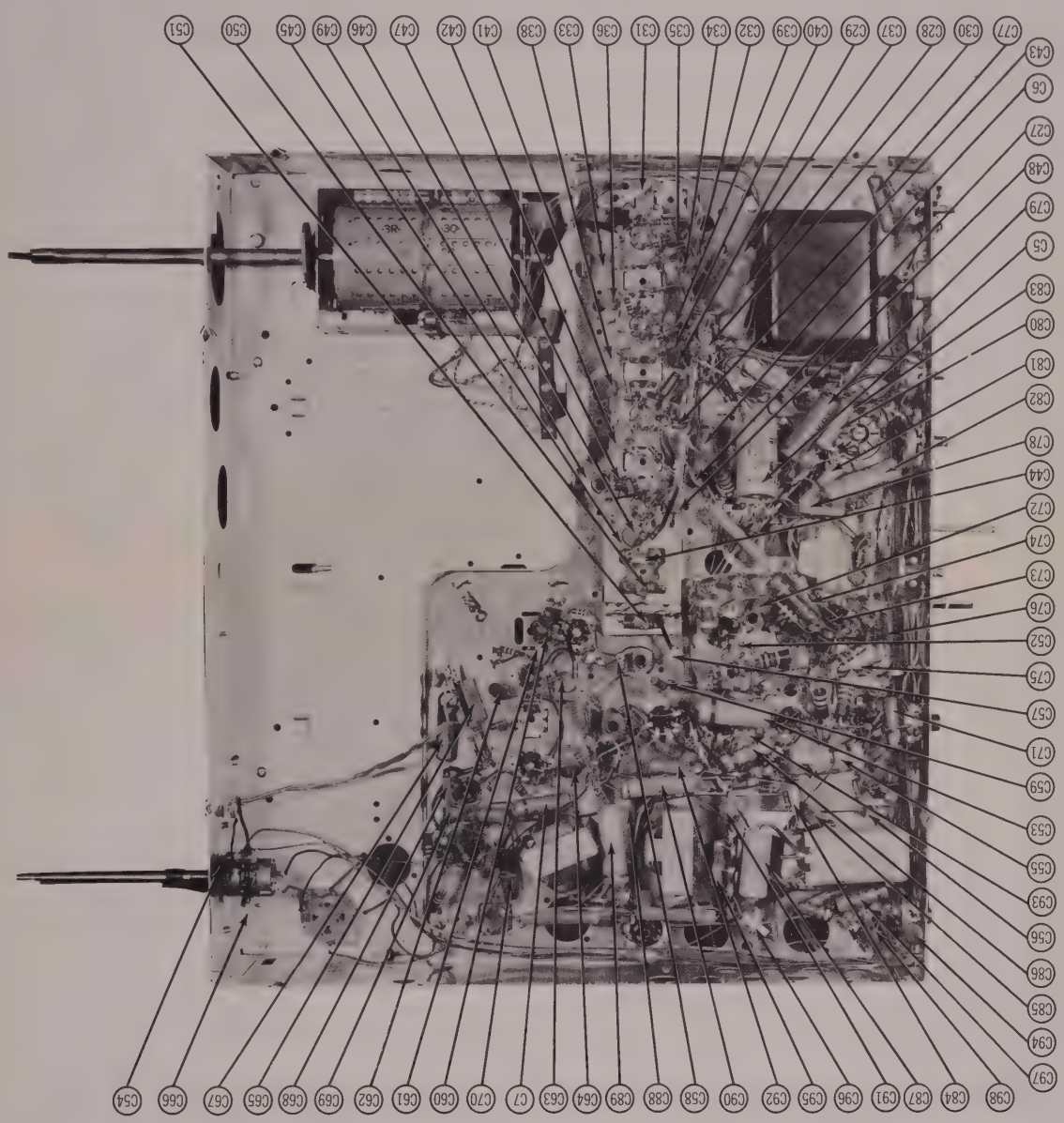
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



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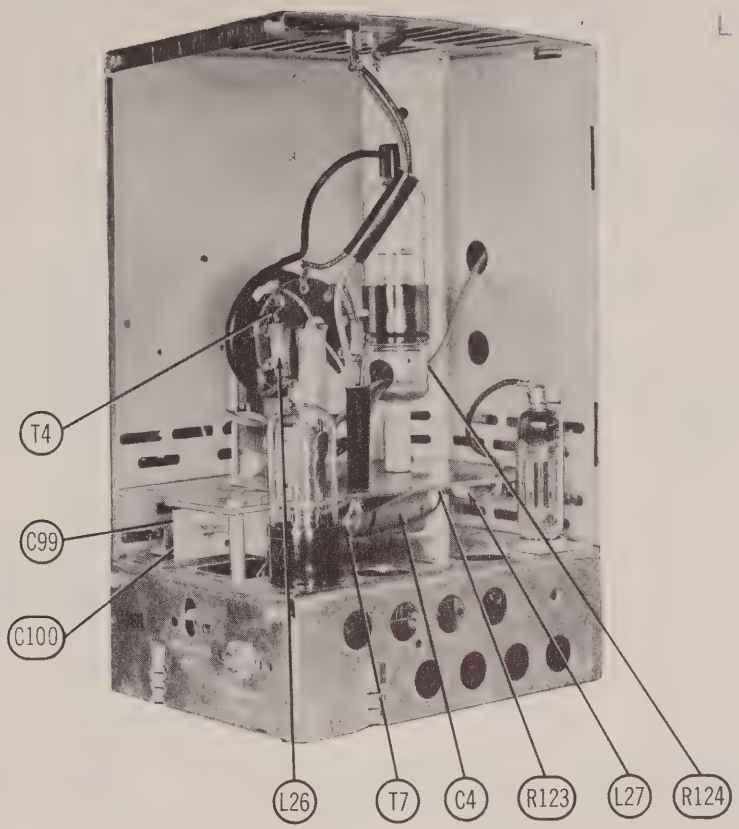
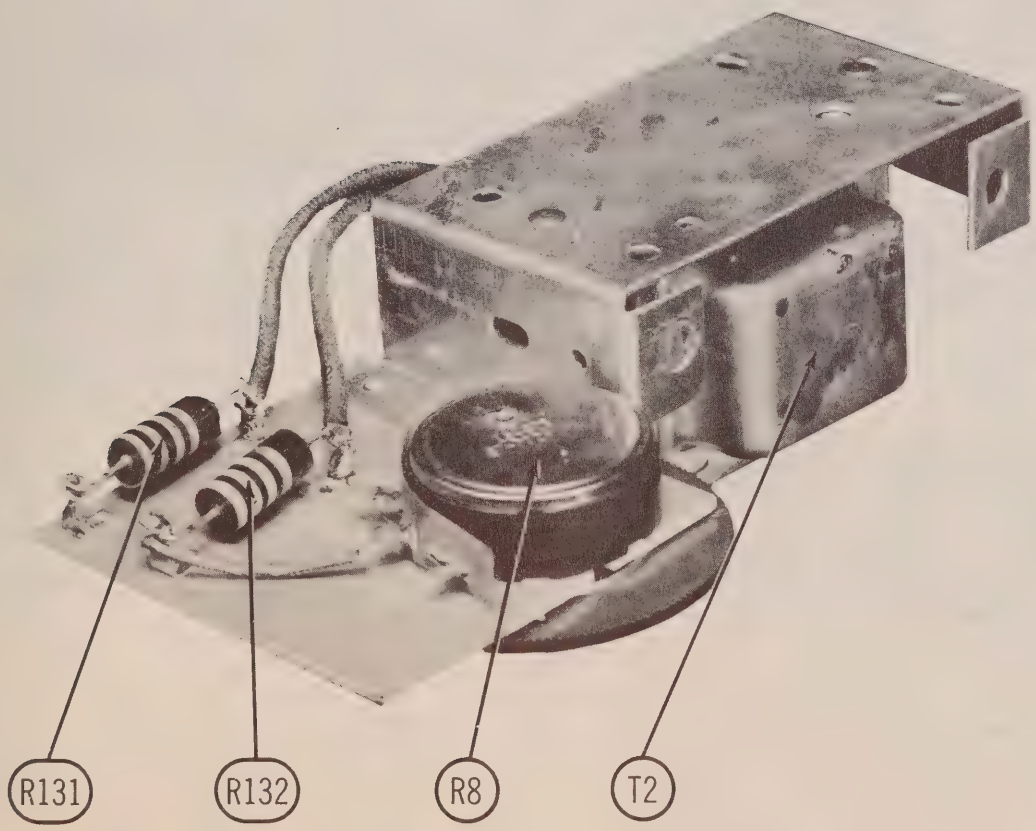


HIGH VOLTAGE COMPARTMENT



HALO LIGHT CONTROL UNIT

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be elimipated by removing the horizontal oscillator tube (V20) from its socket.
Allow a 15 minute warm-up period for receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 12 volt bias supply to the ungrounded side of C37. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the sweep gnerator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over converter tube (V2). Low side to chassis.	Not used	39.75MC (Unmod)	Any not used locally	Use VTVM. DC probe to point (A). Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	.001MFD	High side to pin 5 (grid) of 6J6 (V2). Low side to chassis.	43.25MC (10MC Swp)	42.1MC 45.75MC	See Remarks	Vert. Amp. of scope thru detector (Fig.1) to pin 5 (plate) of 6CB6 (V3). Low side to chassis.	A2, A3	Remove battery bias during this step. Disconnect primary of L11 from plate of V3 and connect a 330Ω carbon resistor in its place. Lower 6J6 (V2) tube shield. Switch between any two channels. Adjust until response similar to Fig.2 is obtained. Remove 330Ω resistor and reconnect L11.
3.	Direct	High side to an ungrounded tube shield floating over converter tube (V2). Low side to chassis.	Not used	41.25MC	Any not used locally	Use VTVM. DC probe to point (A). Common to chassis.	A4	Reconnect -12 volt bias to ungrounded side of C37. Adjust for MINIMUM deflection.
4.	"	"	"	47.25MC	"	"	A5	"
5.	"	"	"	41.25MC	"	"	A6	"
6.	"	"	"	44.0MC	"	"	A7	Adjust for maximum deflection. Attenuate generator output to maintain 1 to 2 volts at VTVM.
7.	"	"	"	42.0MC	"	"	A8	"
8.	"	"	"	45.2MC	"	"	A9	"
9.	"	"	"	43.2MC	"	"	A10	"
10.	Repeat steps 3, 4 and 5.							
11.	Direct	High side to an ungrounded tube shield floating over converter (V2). Low side to chassis.	43.25MC (10MC Swp)	41.25MC 42.1MC 45.75MC 47.25MC	Any not used locally	Vert. Amp. thru 33KΩ to point (A). Low side to chassis.		Check for response curve similar to Fig.3. If necessary, retouch A7 thru A10.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod)	Any not used locally	DC probe to point (B). Common to chassis	All, A12	Adjust for maximum deflection.
13.	"	"	"	"	DC probe to point (C). Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any not used locally	Vert. amp to point (B). Low side to chassis.	All, A12	Disconnect stabilizer capacitor C7. Adjust for curve of maximum amplitude and symmetry as in Fig. 4.
13.	"	"	"	"	"	Vert. amp. to point (C). Low side to chassis.	A13	Reconnect stabilizer capacitor C7. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 5. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines.

SOUND IF ALIGNMENT USING TV SIGNAL AND VTVM

Tune in the strongest TV station available. Make VTVM connections and adjustments A11, A12, and A13 as in steps 12 and 13 under sound IF alignment using AM signal generator and VTVM.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
14.	.001MFD	High side to pin 2 (grid) of 12BY7 (V8). Low side to chassis.	4.5MC (Unmod)	Any not used locally	DC probe thru detector (Fig.1) to pin 11 of picture tube. Common to chassis.	A14	Short pin 1 (grid) of 6CB6 (V6) to chassis. Adjust for MINIMUM deflection. Remove short from pin 1 of V6.

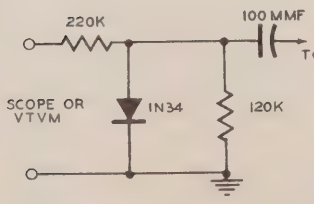


FIG. 1

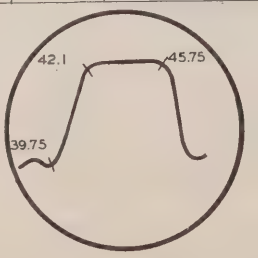


FIG.2

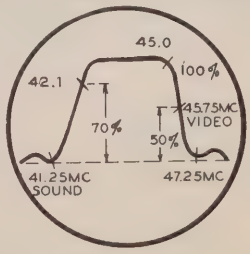


FIG.3

FIG.4

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DENVER, COLORADO

ALIGNMENT INSTRUCTIONS (cont)

VHF TUNER ALIGNMENT FOR CHASSIS 1-518-3

The oscillator adjustment screws are reached through a hole to the upper right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Disconnect the primary winding of L11, 2nd. video IF transformer, from pin 5 (plate) of 6CB6 (V3). Connect a 330Ω carbon resistor in place of the primary winding. Remove 6CB6 (V4) from its socket.
During alignment the use of two marker generators is required. The RF marker generator should be loosely coupled to the sweep generator, or if the sweep generator contains a built in marker it may be used. The IF marker generator should be connected through a .001 to .005 MFD capacitor to pin 2 (cathode) of 6CB6 (V3) and set to the video IF frequency 45.75MC, during oscillator alignment.
Connect the negative lead of a 2.5 volt bias supply to the tuner AGC line. Connect the positive lead to chassis.
Set the oscilloscope gain as close to maximum as possible. This will increase the visibility of IF and RF markers at low level RF sweep input.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep gnerator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to point (E). Low side to chassis.	A15, A16 A17	Adjust for response curve within limits as shown in Fig. 6. If necessary, make compromise adjustments for any excessive dip or tilt on lower channels.
			213MC (10MC Swp)	211.25MC 215.75MC	13			
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			
16.	.001MFD	High side to pin 5 (grid) of 6J6 (V2). Low side to chassis.	43.25MC (10MC Swp)	42.1MC 45.75MC	Switch between any two channels	Vert. Amp. thru detector (Fig.7) to pin 5 (plate) of 6CB6 (V3). Low side to chassis.	A2, A3, A18	Adjust for symmetrical overcoupled, double peaked response curve similar to Fig.8. A2 and A3 position 45.75Marker. A18 determines bandwidth by positioning 42.1MC marker.
17.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru detector (Fig.7) to pin 5 (plate) of 6CB6 (V3). Low side to chassis.	A20	Adjust to make video RF marker and sound marker coincide with 45.75MC marker and 41.25MC marker on response curve.
			213MC (10MC Swp)	211.25MC 215.75MC	13		A19	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A21	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A22	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A23	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A24	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A25	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A26	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A27	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A28	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A29	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A30	

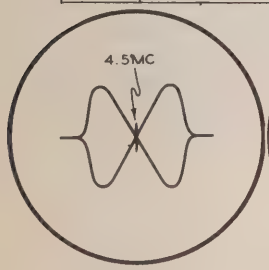


FIG.5

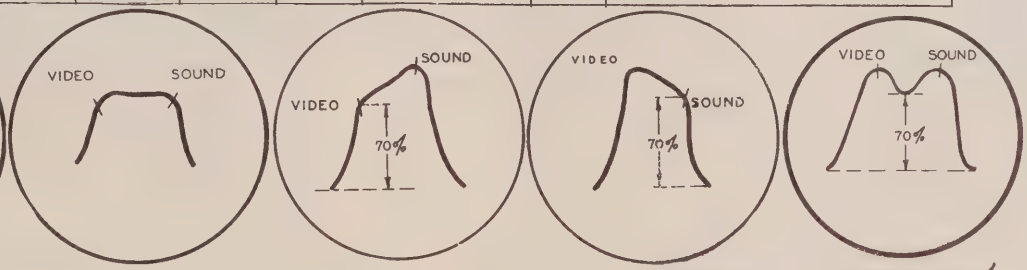


FIG 6

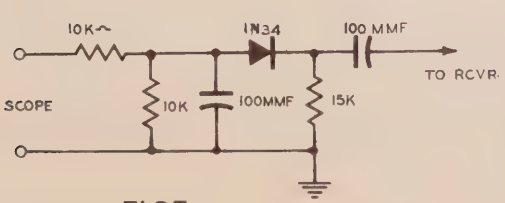


FIG7

FIG8

ALIGNMENT INSTRUCTIONS (cont)

VHF TUNER ALIGNMENT FOR CHASSIS 1-518-1, 1-518-2

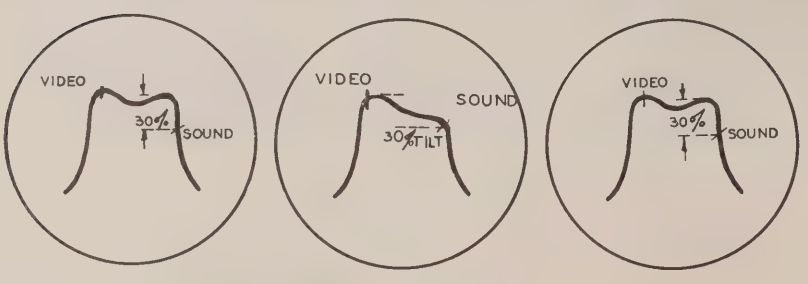
Leave test equipment and bias connected as under VHF tuner alignment for chassis 1-518-3, Disconnect primary winding of L11 and replace with 330Ω carbon resistor as above. Also remove V4 from its socket.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
18.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	69MC (10MC Swp)	67.25MC 71.75MC	4	Vert. amp. thru 10KΩ to point (E). Low side to chassis.	A15, A16, A17 and wire loop	Adjust for response curve within limits as shown in Fig. 9. Position of wire loop near A15 affects band width.
19.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response as in Fig. 9. If necessary, reposition wire loop for desired bandwidth.
20.	"	"	69MC (10MC Swp)	67.25MC 71.75MC	4	"		Retouch A17, if necessary, for symmetrical response.
21.	.001MFD	High side to pin 5 (grid) of 6J6 (osc. mixer). Low side to chassis.	43.25MC (10MC Swp)	42.1MC 45.75MC	Set tuner between any two channels.	Vert. amp. thru detector (Fig. 7) to pin 5 (plate) of 6CB6 (V3). Low side to chassis.	A2, A3 A18	Adjust for symmetrical overcoupled, double peaked response curve similar to Fig. 8. A2 and A3 determines position of 45.75MC marker. A18 determines bandwidth or positioning of 42.1 MC marker.
22.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	69MC (10MC Swp)	67.25MC	4	"	A19	Adjust to make 67.25MC RF marker and 45.75MC IF marker coincide on response curve. If necessary adjust A22 to bring marker within proper tuning range of A19.
23.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	57MC (10MC Swp)	55.25MC 59.75MC	2	Vert. Amp. thru detector (Fig. 7) to pin 5 (plate) of 6CB6 (V3). Low side to chassis.	A20	Adjust to make video RF marker and 45.75MC IF marker coincide on response curve with band pass as in Fig. 9. If necessary retouch A15, A16, A17 and A19 for satisfactory compromise on all channels.
			63MC (10MC Swp)	61.25MC 65.75MC	3		A21	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A22	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A23	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A24	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A25	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A26	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A27	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A28	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A29	
			207MC (10MC Swp)	205.25MC 209.75MC	12		A30	
			213MC (10MC Swp)	211.25MC 215.75MC	13		A31	

UHF TUNER ALIGNMENT FOR CHASSIS 1-518-1, 1-518-2

Switch receiver to UHF position.
Connect -3 volts to tuner AGC line.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Disconnect primary of L11 and connect 330Ω resistor to pin 5 of V4 and B+ side of L11 as above.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
24.	.001MFD	High side to point (F). Low side to chassis.	43.25MC (10MC Swp)	42.1MC 45.75MC	UHF	Vert. amp. thru detector (Fig. 7) to pin 5 of 6CB6 (V3). Low side to chassis.	A32	Adjust for response curve similar to Fig. 2.
25.	Fig. 10	Through dummy to antenna terminals	Not used	896MC (Unmod)	(See remarks)	Use VTVM. DC probe to point (A). Common to chassis.	A33	Turn UHF to extreme high frequency end of dial so that tuning capacitor plates are fully open. Adjust A33 for maximum deflection.
26.	"	"	464MC to 896MC (10MC Swp)	Use separate marker generator. Couple to test point (F) 42.1MC 45.75MC	"	Vert. amp. thru detector (Fig. 7) to pin 5 of 6CB6 (V3). Low side to chassis.		Adjust the three tuning capacitor trimmers for best compromise on dip and tilt. If necessary bend the rotor plates slightly for best over all response similar to Fig. 2. Remove test equipment. Remove 330Ω resistor from pin 5 of V3 and restore primary connection of L11 to Pin 5 of V3.



PERMISSABLE VARIATIONS

FIG 9

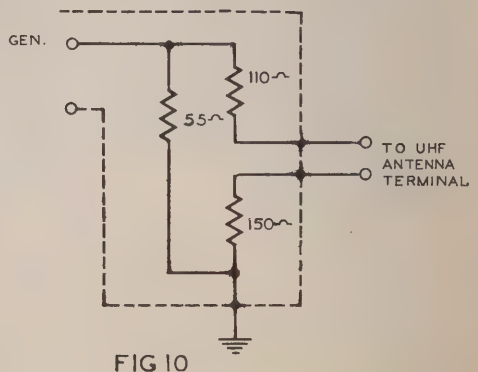
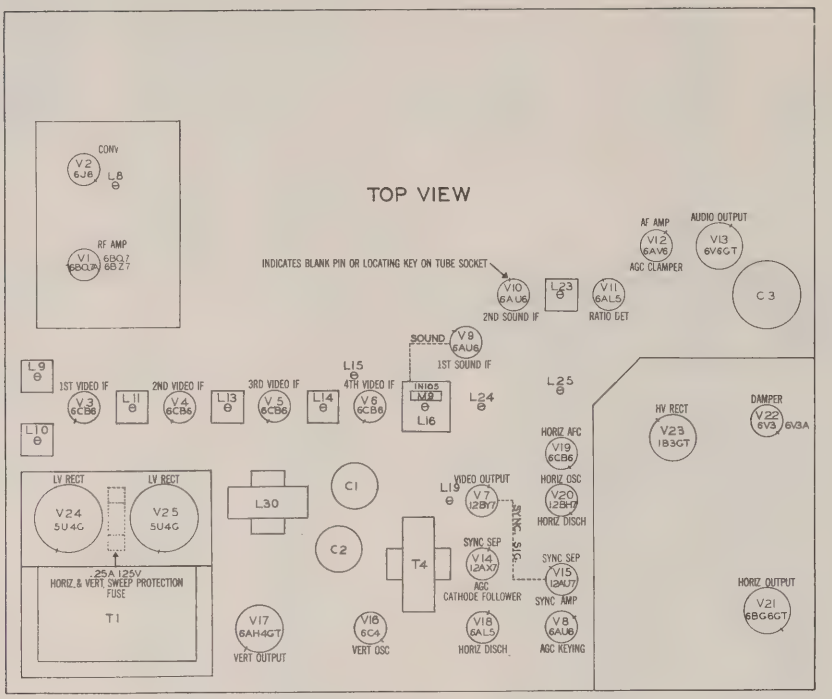


FIG 10

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V24, V25**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V2, V3, V4, V5, V6, V24**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V7, V26**
Has pic, no sound - **V9, V10, V11, V12, V13**
Overloaded picture - **V8, V12**

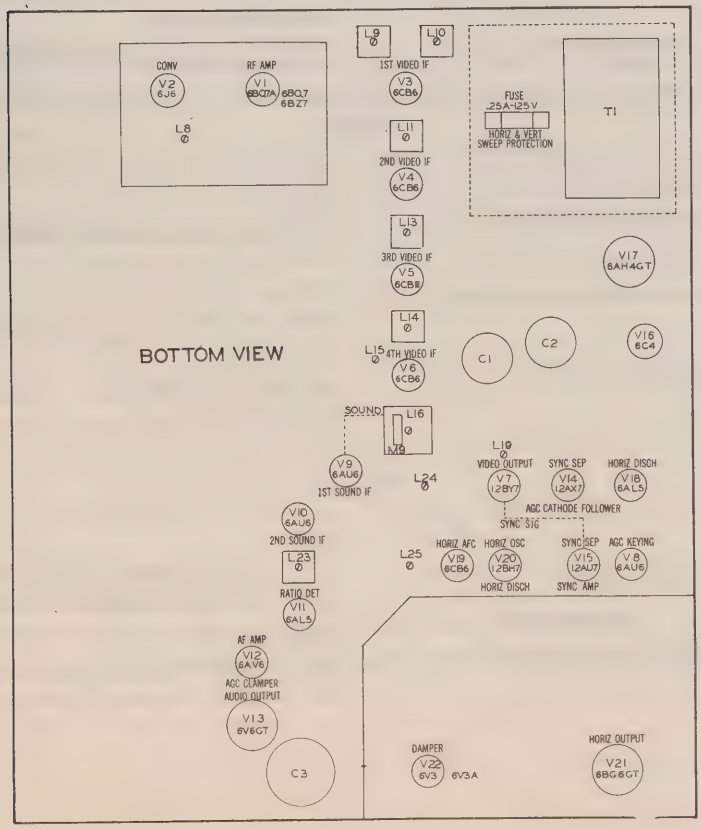
SYNC FAILURE
No vert. sync - **V15, V16, V17**
No horiz. sync - **V15, V18, V19, V20**
No vert. or horiz. sync - **V14, V15**

SWEEP FAILURE
No raster, has sound - **V20, V21, V22, V23, V26 Fuse (M1)**
No vertical deflection - **V16, V17**
Poor vert. linearity or foldover - **V16, V17**
Poor horiz. linearity or foldover - **V20, V21, V22**
Narrow picture - **V20, V22, V23, V24, V25**
Vert. off freq. - **V15, V16, V17**
Horiz. off freq. - **V15, V18, V19, V20**

RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7A	INF	200KΩ	0Ω	.1Ω	0Ω	#3.8KΩ	220KΩ	INF	0Ω
V 2	6J6	†4.7KΩ	†15KΩ	.1Ω	0Ω	235KΩ	10KΩ	0Ω		
V 3	6CB6	22KΩ	47Ω	0Ω	.1Ω	†1KΩ	†6.8KΩ	0Ω		
V 4	6CB6	19KΩ	47Ω	0Ω	.1Ω	†1KΩ	†6.8KΩ	0Ω		
V 5	6CB6	19KΩ	47Ω	0Ω	.1Ω	†1KΩ	†6.8KΩ	0Ω		
V 6	6CB6	.1Ω	330Ω	0Ω	.1Ω	†1KΩ	†1KΩ	0Ω		
V 7	12BY7	50Ω	3.3KΩ	50Ω	.1Ω	.1Ω	0Ω	†3.4KΩ	†60Ω	50Ω
V 8	6AU6	1.3Meg	†2.9KΩ	.1Ω	0Ω	74KΩ	#35KΩ	2.9KΩ		
V 9	6AU6	47KΩ	0Ω	.1Ω	0Ω	†1KΩ	†1KΩ	100Ω		
V 10	6AU6	47KΩ	0Ω	.1Ω	0Ω	†22KΩ	†22KΩ	0Ω		
V 11	6AL5	INF	INF	.1Ω	0Ω	0Ω	0Ω	68KΩ		
V 12	6AV6	15Meg	0Ω	0Ω	.1Ω	175KΩ	0Ω	#220KΩ		
V 13	6V6GT	4.7Ω	.1Ω	#2.6KΩ	#2KΩ	470KΩ	#2.6KΩ	0Ω	390Ω	
V 14	12AX7	†35KΩ	▲370KΩ	1Meg	.1Ω	.1Ω	†12KΩ	680KΩ	0Ω	0Ω
V 15	12AU7	#14.5KΩ	†680KΩ	330Ω	.1Ω	.1Ω	▲360KΩ	▲360KΩ	†6.8KΩ	0Ω
V 16	6C4	▲780KΩ	INF	0Ω	.1Ω	▲780KΩ	3Meg	0Ω		
V 17	6AH4GT	1.8Meg	0Ω	INF	320KΩ	#950Ω	INF	.1Ω	2.5KΩ	
V 18	6AL5	0Ω	1.1Meg	.1Ω	2Ω	200KΩ	0Ω	1.1Meg		
V 19	6CB6	670KΩ	330Ω	0Ω	.1Ω	†100Ω	#17KΩ	330Ω		
V 20	12BH7	#260Ω	470KΩ	10Ω	0Ω	0Ω	#240KΩ	150KΩ	0Ω	.1Ω
V 21	6BQ6GT	INF	.1Ω	#240KΩ	#22KΩ	470KΩ	#22KΩ	0Ω	485Ω	TOP CAP ▲20Ω
V 22	6V3A	INF	#25Ω	#24Ω	.1Ω	0Ω	INF	#25Ω	INF / Pin 9 #25Ω	TOP CAP 500KΩ
V 23	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								TOP CAP ▲560Ω
V 24	5U4G	INF	9KΩ	INF	4.5Ω	INF	4.5Ω	INF	9KΩ	
V 25	5U4G	INF	45KΩ	INF	18Ω	INF	14Ω	INF	45KΩ	
V 26	21EP4A	0Ω	790KΩ	PIN 10 ▲430KΩ	PIN 11 †270KΩ	PIN 12 .1Ω				

† MEASURED FROM PIN 8 OF V24
# MEASURED FROM PIN 8 OF V25
▲ MEASURED FROM CAP OF V22



TUBE PLACEMENT CHART

SET 229 FOLDER 15

PROPERTY OF
L. F. BLANKENBINE
3828 [illegible]
DENVER, COLORADO

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V20, V21, V22 and V25. Check adjustment of horizontal drive control, and B1. Check waveform W19.

If Satisfactory	If Unsatisfactory
Check R122, C97, C99, T4, T6A and other associated components.	Check C93, C94, C95, C96, R113, R114, R117 and other associated circuit components.

DRIVE LINES

Check by substitution V20, V21 and V22. Check adjustment of horizontal drive control. Check C94, C95, C96, C99, C100, T4, T6A, and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V20, V21 and V22. Check components associated with the horizontal output and damper stages especially T4 and T6A.

FOLDS

Follow procedure outlined under "Drive Lines".

XMAS TREE EFFECT

Check by substitution V19 and V20. Check components associated with these stages.

VERTICAL

LOSS OF SWEEP

Check by substitution V16 and V17. Check waveform W10.

If Satisfactory	If Unsatisfactory
Check T5, T6B and other associated circuit components.	Check C79, C82, C78, R7 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V16 and V17. Check adjustment of height and vertical linearity controls. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT TOP

Check by substitution V16 and V17. Check T4, T6A, C2C and other associated circuit components.

COMPRESSED AT BOTTOM

Check by substitution V16 and V17. Check C78, C82, R7, R93 and other associated circuit components.

FOLDS

Check by substitution V16 and V17. Check components associated with these stages.

SYNC

LOSS OF HORIZONTAL AND VERTICAL SYNC

Check by substitution V14 and V15. Check components associated with these stages especially C72, C73 and C74.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Check by substitution V14, V15 and V16. Check waveform W8.

If Satisfactory	If Unsatisfactory
Check components associated with V16.	Check components associated with V15 and V14.

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Check by substitution V18 V19 and V20. Check waveform W13 and W14.

If Satisfactory	If Unsatisfactory
Check components associated with V19 and V20.	Check components associated with V18. Check C84, R80 and R81.

HORIZONTAL BENDING

Check by substitution V19, V20 and V21. Check circuit near these stages for filament lead dress shorts.

VIDEO

LOSS OF VIDEO

Substitute V7. Check associated components especially R51, R52, L20A, L20B, and C53.

SOUND BARS (4.5MC Beat)

Check fine tuning adjustment. Check adjustment of A14. Check video IF alignment.

POOR CONTRAST

Substitute V7. Check picture tube, video detector crystal and other associated circuit components.

NEGATIVE PIX

Check by substitution V7 and V14. Check setting of AGC control. Check picture tube, video detector crystal and other associated circuit components.

SMEAR

Substitute V7. Check C53, L20A, L20B, R51, R52, R54, picture tube, video detector, crystal and other associated circuit components for failure or change of value.

WIDE BLACK BAR ACROSS PIX

Check V1, V2, V3, V4, V5, V6 and V7 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V9, V10, V11, V12 and V13. Check stages V12 and V13 using an audio signal generator. Apply signal across R70.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alignment and components.	Check components associated with V12 and V13.

BUZZ

Adjust fine tuning for best picture. Adjust A13 for minimum buzz. If buzz is still objectionable, substitute V11 and realign audio IF and ratio detector. Follow procedure outlined in the alignment section.

DISTORTED

Follow procedure outlined under "Weak or No Sound".

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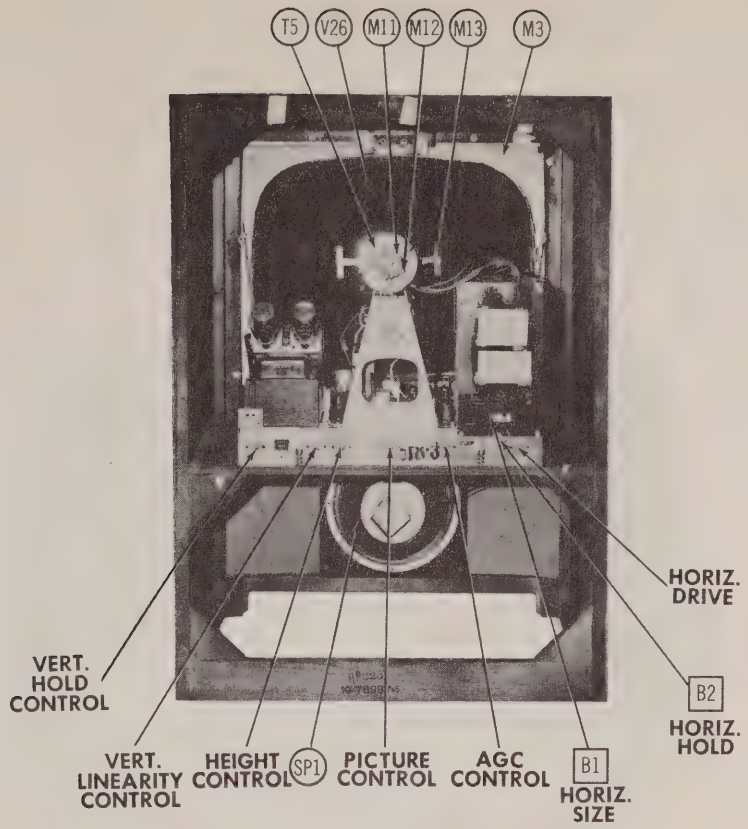


CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern. Adjust picture and brightness controls for normal picture.

1. Adjust the horizontal drive control to its maximum clockwise rotation without the presence of a vertical white line or compression near the center of the picture.
2. Adjust the horizontal size slug (B1) for a picture slightly wider than necessary to fill the picture mask horizontally.
3. Remove the horizontal discriminator tube (V18) from its socket and adjust the horizontal hold slug (B2) until the blanking bar is in a vertical position and moving slowly back and forth across the screen. Replace V18 in its socket.
4. Switch off channel, then back. If picture does not fall in sync proceed with step 5 (phase adjustment).
5. Turn the ringing coil slug (B4) maximum counter clockwise and short the peaking resistor, R115.
6. Repeat steps 3 and 4.
7. Adjust the phasing slug (B3) for equal blanking on both sides of picture. To see blanking turn contrast to minimum and readjust brightness, then move picture from left to right with the centering lever.
8. Repeat steps 3 and 4 and recheck phasing as in step 7.
9. Remove short across R115 and readjust horizontal drive control as in Step 1.
10. Adjust B4 for equal blanking on both sides of picture.
11. Repeat steps 3 and 4.

AGC CONTROL ADJUSTMENT

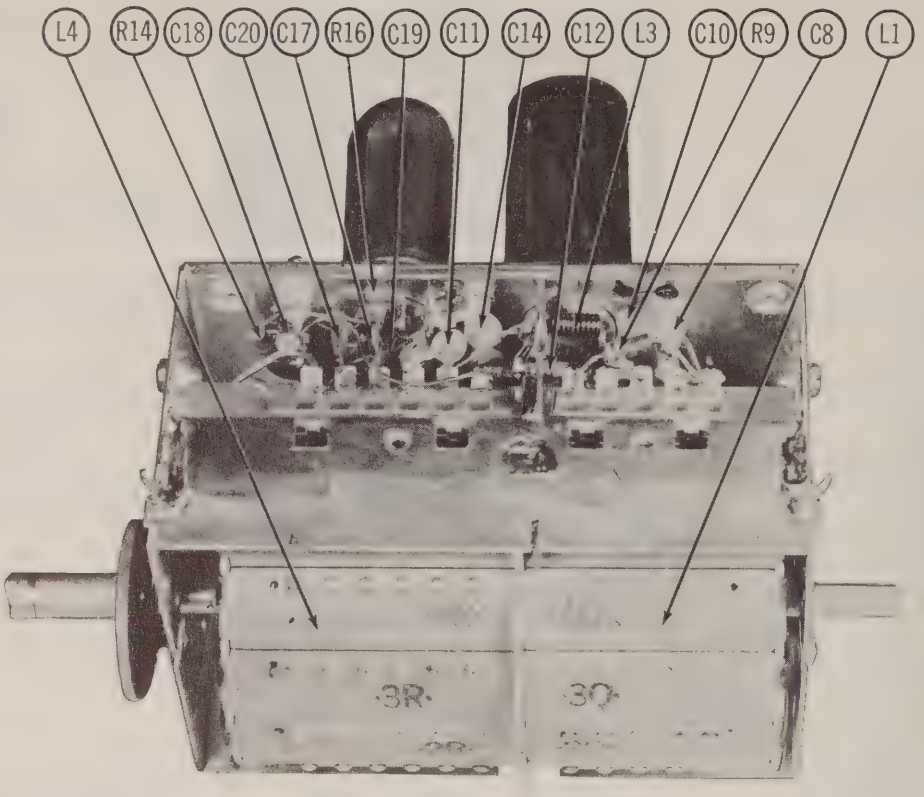
Tune in the strongest TV station available.

With brightness control at normal setting turn contrast control to approximately 7/8 maximum contrast.

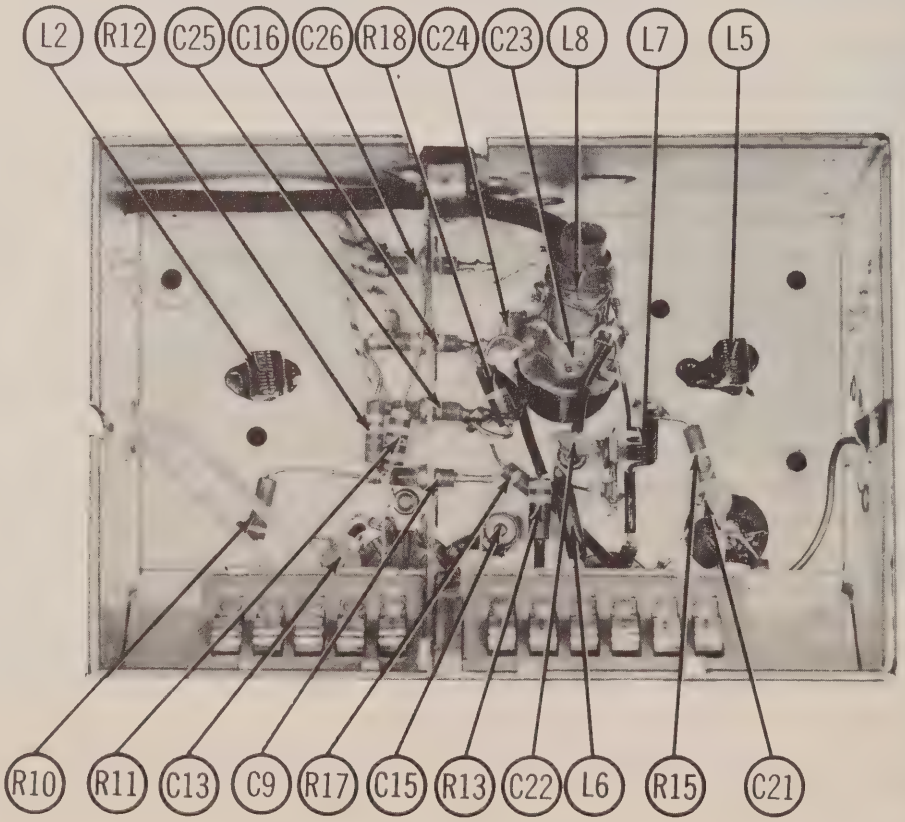
Turn AGC control maximum clockwise blacking out the picture, then slowly turn control counter clockwise until a picture reappears and remains stable as fine tuning control is rocked through the picture.

Set contrast control for normal contrast (Do not use AGC control as contrast control).

With volume control set for normal volume slightly readjust AGC control, if necessary, to minimize any intercarrier buzz as fine tuning control is rocked through the correct tuning point.



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

PROPERTY OF
L. F. DLANKENSHIP
3021 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1A	RF Amplifier	6BQ7A	6BQ7A	9AJ	Ch. 1-518-3 only
B	RF Amplifier	6BQ7	6BQ7	9AJ	
C	RF Amplifier	6BZ7	6BZ7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	4th. Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Output	12BY7	12BY7	9BF	
V8	AGC Keying	6AU6	6AU6	7BK	
V9	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V10	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Detector	6AL5	6AL5	6BT	
V12	AF Amplifier-AGC Clamper	6AV6	6AV6	7BT	
V13	Audio Output	6V6GT	6V6GT	7S	
V14	Sync Sep. -AGC Cathode Follower	12AX7	12AX7	9A	
V15	Sync Separator-Sync Amplifier	12AU7	12AU7	9A	
V16	Vert. Oscillator	6C4	6C4	6BG	
V17	Vert. Output	6AH4GT	6AH4GT	8EL	
V18	Horiz. Discriminator	6AL5	6AL5	6BT	
V19	Horiz. AFC	6CB6	6CB6	7CM	
V20	Horiz. Oscillator-Horiz. Discharge	12BH7	12BH7	9A	
V21	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V22A	Damper	6V3	6V3	9BD	
B	Damper	6V3A	6V3A	9BD	
V23	HV Rectifier	1B3GT	1B3GT	3C	
V24	LV Rectifier	5U4G	5U4G	5T	
V25	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: SYLVANIA PART No.	SYLVANIA PART No.	GENERAL ELECTRIC PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V26	21EP4A	21EP4A			12D	① Circuit changes necessary.
		21EP4 ①	21EP4 ①		12D	
		21EP4B	21EP4B		12D	
		21FP4A ①		21FP4A ①	12C	
		21FP4 ①			12C	
		21FP4C ①			12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	400	161-2004	AFH3-44		BO48		FP377	TVL-2675	
B	▲80	400								
C2A	■40	200	16103012	AFH4-120		D101		FP420.6	TVL-4700	
B	▲80	200								
C	▲100	50								
C3A	▲20	400		AFH4-57		DO52			TVL-4667	
B	■10	400								
C	25	25								
D	▲10	400								Note 1
C4	10	450	161-1013	PRS450/10		BR1045		TC72	TVA-1705	
C5	10	500	161-1010	PRS500/10		BR1050		TC82		
C6	2	50	161-1001	PRS150/4		BBR-2-50T		TC302	TVA-1301	
C7	2	50	161-1001	PRS150/4		BBR-2-50T		TC302	TVA-1301	
C8	3-8				829-10					
C9	800			EF-001	MFT-1000				503C-D1	
C10	3			SI3NP0	TCZ-3.3		NP0K-3R3		5TCCB-V33	
C11	68			SI68	D6-680		GP1K-680	UC-5468	5GA-Q68	
C12	800			EF-001	MFT-1000				503C-D1	
C13	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D5	
C14	1.5			SI1.5NP0	TCZ-1.5		NP0K-1R5		5TCCB-V15	
C15	.5-3				829-3			CT565A		
C16	800			EF-001	MFT-1000				503C-D1	
C17	47			BPD-000047	D6-470		GP1K-470	UC-5447	5GA-Q47	
C18	.5-3				829-3			CT565A		
C19	10			SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCU-Q1	
C20	5									
C21	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C22	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C23	6.8			SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C24	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C25	800			EF-001	MFT-1000				503C-D1	
C26	800			EF-001	MFT-1000				503C-D1	
C27A	4700		168-0011D	BPD-2X0047	DD2-502	TM5DD5	822-005	DCD-525	5HK-2D47	
B	4700									
C28	.22	200	162-0402	P488-22		PTE4P22		PT4025	4TM-P22	
C29	4700		166-4700D	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C30	.047	200	160-04147	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C31	270		166-0270N	SI270	D6-271		GP2K-271	UC-5327	5GA-T27	
C32	4700		166-4700D	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C33A	4700		168-0011D	BPD-2X0047	DD2-502	TM5DD5	822-005	DCD-525	5HK-2D47	
B	4700									
C34	4700		166-4700D	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C35	1000		166-1000D.	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C36	4700		166-4700D	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C37	.22	200	162-0402	P488-22		PTE4P22		PT4025	4TM-P22	
C38A	4700		168-0011D	BPD-2X0047	DD2-502	TM5DD5	822-005	DCD-525	5HK-2D47	
B	4700									
C39	1000		166-1000D	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	

(CONT'D ON NEXT PAGE)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C40	4700		166-4700D	BPD-0047	DD-502	TMSD5	811-005	DC-525	5HK-D47	
C41	4700		166-4700D	BPD-0047	DD-502	TMSD5	811-005	DC-525	5HK-D47	
C42A	4700		168-001LD	BPD-2X0047	DD2-502	TMSDD5	822-005	DCD-525	5HK-2D47	
B	4700									
C43	1000		166-1000D	BPD-001	DD-102	TMSD1	801-001	DC-521	5HK-D1	
C44	4.7		168-0008N	SI4.7NP0	TC2-4.7		NP0K-4R7	Z7-555	5TCCB-V47	
C45	4700		166-4700D	BPD-0047	DD-502	TMSD5	811-005	DC-525	5HK-D47	
C46	4700		166-4700D	BPD-0047	DD-502	TMSD5	811-005	DC-525	5HK-D47	
C47	270		166-0270N	SI270	D6-271		GP2K-271	UC-5327	5GA-T27	
C48	1000		166-1000D	BPD-001	DD-102	TM6D1	801-001	DC-521	5HK-D1	
C49	43		166-0043P							
C50	10		166-0010P	SI10NP0	TCZ-10		NP0K-100	Z7-541	5TCC-Q1	
C51	10		166-0010P	SI10NP0	TCZ-10		NP0K-100	Z7-541	5TCC-Q1	
C52	4.7		168-0008N	SI4.7NP0	TC2-4.7		NP0K-4R7	Z7-555	5TCCB-V47	
C53	.22	200	162-0402	P488-22		PTE4P22		PT4025	4TM-P22	
C54	4700		166-4700D	BPD-0047	DD-502	TMSD5	811-005	DC-525	5HK-D47	
C55	.22	200	162-0402	P488-22		PTE4D22		PT4025	4TM-P22	
C56	.0022	600	162-0822	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-P22	
C57	4.7		168-0008N	SI4.7NP0	TC2-4.7		NP0K-4R7	Z7-555	5TCCB-V47	
C58	4.7		168-0008N	SI4.7NP0	TC2-4.7		NP0K-4R7	Z7-555	5TCCB-V47	
C59	10		166-0010P	SI10NP0	TCZ-10		NP0K-100	Z7-541	5TCC-Q1	
C60A	4700		168-001LD	BPD-2X0047	DD2-502	TMSDD5	822-005	DCD-525	5HK-2D47	
B	4700									
C61	47		166-0047N	SI47	D6-470		GP1K-470	UC-5447	5GA-Q47	
C62	4700		166-4700D	BPD-0047	DD-502	TMSD5	811-005	DC-525	5HK-D47	
C63	4700		166-4700D	BPD-0047	DD-502	TMSD5	811-005	DC-525	5HK-D47	
C64	4700		166-4700D	BPD-0047	DD-502	TMSD5	811-005	DC-525	5HK-D47	
C65A	330			D6-331			GP2K-331	UC-531	5GA-T33	
B	680		†190-0013	† PA183	D6-681		GP2K-681	UC-681	5GA-T68	
C	10000				DD-103		61L-01	DC-511	5HK-S1	
C66	10000		*190-0006	* PA184	DD-103		81L-01	DC-511	5HK-S1	
C67	.01	600	160-0611	P688-01	D6-103	PTE6SI	GP2-333-103	PT61	6TM-S1	
C68	100	500	163-0100	1468-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C69	.01	600	160-0611	P688-01	D6-103	PTE6SI	GP2-333-103	PT61	6TM-S1	
C70	.015	600	160-0615	P688-015		PTE6SI5		PT615	6TM-SI5	Note 2
C71	.0033	600	162-06233	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33	
C72	.0047	400	162-04247	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C73	.047	400	160-04147	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C74	.01	600	160-0611	P688-01	D6-103	PTE6SI	GP2-333-103	PT611	6TM-SI	
C75A	.002					PTE6D2		PT6232		
B	.005			♦PA-110	♦PC-100	PTE6D5	s1405-01	PT6235	s101C1	
C	.006					PTE6D5		PT6235		
C76	.001	600	160-0621	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C77	.0033	600	162-06233	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33	
C78	680	500	163-0680	1479-0007		5R5T7		MS-37	5HM-S68	
C79	.047	600	162-06147	P688-047	DF-503	PTE6D47		PT6147	6TM-S47	
C80	.0033	600	162-06233	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33	
C81	.01	600	160-0611	P688-01	D6-103	PTE6SI	GP2-333-103	PT611	6TM-SI	
C82	.1	400	160-0401	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C83	.00022	1000	160-00332							
C84	100	500	163-0100	1468-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C85	.0047	400	162-04247	P688-0047		PTE6D47		PT6247	6TM-D47	
C86	.0047	400	162-04247	P688-0047		PTE6D47		PT6247	6TM-D47	
C87	.015	600	160-0610	P688-015		PTE6SI5		PT615	6TM-SI5	
C88	.22	400	162-0402	P488-22		PTE4P22		PT4025	4TM-P22	
C89	.22	200	162-0402	P488-22		PTE4P22		PT4025	4TM-P22	
C90	.1	200	160-0201	P288-1	DF-104	PT2P1		PT201	2TM-P1	
C91	100	500	163-0100	1469-0001		5R5T1		MCB235	MS-31	
C92	.0022	400	162-04228	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C93	.01	600	160-0611	P688-01	D6-103	PTE6SI	GP2-333-103	PT611	6TM-SI	
C94	4700		166-4700D	BPD-0047	DD-502	TMSD5	811-005	DC-525	5HK-D47	
C95	470	500	163-0470	1469-0005		5R5T5		MCB245	MS-35	Note 3
C96	1000		166-1000P	SI1000	D6-102	TMSD1	GP2L-102	UC-521	5HK-D1	
C97	.047	400	160-04147	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C98	1000		166-1000D	BPD-001	DD-102	TMSD1	801-001	DC-521	5HK-D1	
C99	.22	200	162-0402	P488-22		PTE4P22		PT4025	4TM-P22	
C100	.1	600	160-0601	P688-1		PTE6P1		PT601	6TM-P1	
C101	56	2000	†74-0056						20CA-Q56	
C102	680									Note 4

Note 1. Some Models use 20MFD ⓐ 100V in this application (C3 part #161-4006).
Note 2. Some Models use .01MFD in this application (part #160-0611).
Note 3. Some Models use 680MMF in this application (part #163-0680).
Note 4. Original production only.
* Items C66 and R47 are combined in one unit.
† Items C65A, C65B, C65C, R67 are combined in one unit.
♦ Items C75A, C75B, C75C, R87A, R87B, R87C are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	SYLVANIA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2Meg	½	157-0019	*QJ-417	RTV-388	SBBT-730-S		Brightness (Panel)
B	1Meg	½	Not Reg.					Volume & Switch - tapped ⓐ
								1SKΩ (rear)
R2A	2Meg	½	163-0018	QU-139	AG-83-S	AB-75	SU-56	Vert. Hold
B	Shaft		Not Reg.	Not Reg.	FKS-1/4	AK-1	Not Reg.	Attach to R2A
R3A	2500Ω	½	153-3011	WK-2500	AG-85-S	AB-7	SU-8	Vert. Linearity
B	Shaft		Not Reg.	Not Reg.	FK2-1/4	AK-1	Not Reg.	Attach to R3A
R4A	250Ω	2	153-3007	WK-250	A43-300	VK-123	R-250L	Contrast
B	Shaft		Not Reg.	Not Reg.	FKS-1/4	Not Reg.	Not Reg.	Attach to R4A
R5A	1Meg	½	153-0009	QU-137	AG-81-S	AB-89	SU-54	AGC
B	Shaft		Not Reg.	RQ	FKS-1/4	AK-1	Not Reg.	Attach to R5A
R6A	250Ω	½	153-0007	QU-130	AG-55-S	AB-50	SU-46	Horiz. Drive
B	Shaft		Not Reg.	RQ	FK2-1/4	AK-1	Not Reg.	Attach to R6A
R7A	1.5Meg	½	153-0014	QU-138	AG-83-S	AN-75	SU-58	Height
B	Shaft		Not Reg.	RQ	FK2-1/4	AK-1	Not Reg.	Attach to R7A
R8A	250KΩ	½	153-0015	QU-130	AG-55-S	B-50	U-46	HaloLight
B	Shaft		Not Reg.	Not Reg.	FS-3 *	Not Reg.	Not Reg.	Attach to R8A

* CONCENTRIKIT EQUIVALENT KIT K-2 BASE ELEMENTS & SHAFTS Bll-139 & Pl-405 (Panel)
Bl3-137X & R2-428 (Rear) & SWITCH 76-2.

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA SYLVANIA PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R9	15KΩ	½		BTS-15K	
R10	47KΩ	½		BTS-47K	
R11	330KΩ	½		BTS-330K	
R12	220KΩ	½		BTS-220K	
R13	470Ω	½		BTS-470	
R14	15KΩ	½		BTS-15K	
R15	220KΩ	½		BTS-220K	
R16	10KΩ	½		BTS-10K	
R17	4700Ω	½		BTS-4700	
R18	15KΩ	½		BTS-15K	
R19	10KΩ	1	181-0103	BTA-10K	
R20	4700Ω	2	183-0473	BTB-4700	
R21	2700Ω	½		BTS-2700	
R22	47Ω	½	181-0470	BTS-47	
R23	1000Ω	½	181-0102	BTS-1000	
R24	1Meg	½		BTS-1Meg	Note 1.
R25	100KΩ	½	181-0104	BTS-100K	
R26	56KΩ	½	181-0563	BTS-56K	Note 2.
R27	6800Ω	½	181-0682	BTS-6800	
R28	1000Ω	½	181-0102	BTS-1000	
R29	2700Ω	½	181-0272	BTS-2700	
R30	1000Ω	½	181-0102	BTS-1000	
R31	56KΩ	½	181-0563	BTS-56K	
R32	47Ω	½	181-0470	BTS-47	
R33	6800Ω	½	181-0682	BTS-6800	
R34	1000Ω	½	181-0102	BTS-1000	
R35	1500Ω	½	181-0152	BTS-1500	
R36	1000Ω	½	181-0102	BTS-1000	
R37	18KΩ	½	181-0183	BTS-18K	
R38	47Ω	½	181-0470	BTS-47	
R39	6800Ω	½	181-0682	BTS-6800	
R40	1000Ω	½	181-0102	BTS-1000	
R41	1200Ω	½		BTS-1200	Note 3
R42	330Ω	½	181-0331	BTS-330	
R43	1000Ω	½	181-0102	BTS-1000	
R44	10KΩ	½	181-0103	BTS-10K	
R45	1000Ω	½	181-0102	BTS-1000	
R46	3900Ω	½	181-0392	BTS-3900	
R47	8200Ω	½	181-0822	BTS-8200	
R48	3300Ω	½	181-0332	BTS-3300	
R49	15KΩ	½	181-0153	BTS-15K	
R50	3900Ω	½	181-0392	BTS-3900	
R51	6800Ω	2	183-0682	BTB-6800	
R52	6800Ω	2	183-0682	BTB-6800	
R53	270KΩ	½	181-0274	BTS-270K	
R54	3.9Meg	½	181-0395	BTS- 3.9Meg	
R55	470KΩ	½	181-0474	BTS-470K	
R56	330KΩ	½	181-0334	BTS-330K	
R57	1Meg	½	181-0105	BTS-1Meg	
R58	470KΩ	½	181-0474	BTS-470K	
R59	33KΩ	½	181-0333	BTS-33K	
R60	47KΩ	½	181-0473	BTS-47K	
R61	10Ω	½	181-0101	BTS-10	
R62	47KΩ	½	181-0473	BTS-47K	
R63	1000Ω	½	181-0102	BTS-1000	
R64	47KΩ	½	181-0473	BTS-47K	
R65	22KΩ	½	181-0223	BTS-22K	
R66	270Ω	½	181-0271	BTS-270	
R67	100KΩ	½	† 190-0013	BTS-100K	
R68	47KΩ	½	* 190-0006	BTS-47K	
R69	68KΩ	½	181-0683	BTS-68K	
R70	15 Meg	½	181-0156	BTS-15Meg	
R71	220KΩ	½	181-0224	BTS-220K	
R72	470KΩ	½	181-0474	BTS-470K	
R73	390Ω	½	182-0391	BTA-390	
R74	47Ω	½	181-0470	BTS-47	
R75	2000Ω	5	187-0005	1 3/4A-2000	
R76	10KΩ	½	181-0103	BTS-10K	
R77	10KΩ	½	181-0103	BTS-10K	
R78	360KΩ 5%	½	182-03645	BTA-360 5%	
R79	33KΩ	½	181-0333	BTS-33K	
R80	15KΩ	½	183-0153	BTB-15K	
R81	33KΩ	½	182-0333	BTA-33K	
R82	680K	½	181-0684	BTS-680K	
R83	12KΩ	½	181-0123	BTS-12K	
R84	10KΩ	½	181-0103	BTS-10K	
R85	680KΩ	½	181-0684	BTS-680K	
R86	330Ω	½	181-0331	BTS-330	
R87A	22KΩ	½		BTS-22K	
B	8200Ω	½	♦	BTS-8200	
C	8200Ω	½		BTS-8200	
R88	1.5Meg	½	181-0185	BTS-1.5Meg	Note 5.
R89	33KΩ	½	181-0333	BTS-33K	
R90	220KΩ	½	181-0224	BTS-220K	
R91	680KΩ	½	181-0684	BTS-680K	
R92	100KΩ	½	181-0104	BTS-100K	
R93	470KΩ	½	181-0474	BTS-470K	
R94	120KΩ	1	182-0122	BTA-1200	
R95	12KΩ 5%	½	181-01235	BTS-12K 5%	
R96	2.2Meg	½		BTS-2.2Meg	Note 4.
R97	10Meg	½		BTS-10Meg	Note 4.
R98	220KΩ	½		BTS-220K	Note 4.
R99	56KΩ	½	181-0561	BTS-560	
R100	560Ω	½	181-0561	BTS-560	
R101	1000Ω	½	181-0102	BTS-1000	
R102	470KΩ	½	181-0474	BTS-470K	
R103	100KΩ	½	181-0104	BTS-100K	
R104	100KΩ	½	181-0104	BTS-100K	
R105	1Meg	½	181-0105	BTS-1Meg	
R106	1000Ω	½	181-0102	BTS-1000	
R107	8200Ω	½	181-0822	BTS-8200	
R108	15KΩ	1	182-0153	BTA-15K	
R109	33KΩ	2	183-0333	BTB-33K	
R110	330Ω	½	181-0331	BTS-330	
R111	470KΩ	½	181-0474	BTS-470K	
R112	22KΩ	½	181-0223	BTS-22K	
R113	150KΩ	½	181-0154	BTS-150K	
R114	82KΩ	½	181-0823	BTS-82K	
R115	6800Ω	½		BTS-6800	Note 5
R116	10Ω	½	181-0101	BTS-100	
R117	470KΩ	½	181-0474	BTS-470K	
R118	15Ω	2	183-0151		
R119	39Ω	5	187-0018		
R120	4.3Ω	½	189-0007		
R121	10Ω	½	181-0101	BTS-100	
R122	22KΩ	½	183-0223	BTB-22K	
R123	1000Ω	½	181-0102	BTS-1000	
R124	2.7Ω	½	189-0035		
R125	100KΩ	2	183-0104	BTB-100K	
R126	2000Ω	5	187-0005	1 3/4A-2000	
R127	4700Ω	2	183-0472	BTB-4700	
R128	4700Ω	2	183-0472	BTB-4700	
R129	4.3Ω	½	189-0007		
R130	4.7Ω	½	189-0029		
R131	33KΩ	2	189-0028	BTB-33K	
R132	33KΩ	2	189-0028	BTB-33K	

Note 1. Some models may use a 1.5Meg resistor in this application.
Note 2. Not used in all models.
Note 3. Some models may use a 1500Ω resistor in this application.
Note 4. Used in early production models only.
Note 5. Some models may use a 47000 resistor in this application.
Note 6. Some models may use a 2.2Meg resistor in this application.
* Items R68 & C66are combined in one unit.
† Items R67, C65A, C65B, C65C are combined in one unit.
♦ Items R87A, R87B, R87C, C75A, C75B, C75C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA SYLVANIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC ⓐ 2.18A	630VCT .220ADC	5VAC ⓐ 3A tap ⓐ 290VCT .124ADC	5VAC ⓐ 3A SEC. 4 6.3VAC ⓐ 1A	141-0036 ① 141-0021 ②					

① Used in receivers bearing serial #518206 and above has bracket on top shell for 5U4.
② Used in receivers bearing serial nos. below 518206, has 5U4 mounted in top shell.

TRANSFORMER (HALOLIGHT)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA SYLVANIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE NO.
T2	117VAC ⓐ .14A	1140VAC			141-0030					

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA SYLVANIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T3	130Ω	750Ω	242-0002	A-8125	A-3003	TSO-5	A-97X	209T1 ①	Vert. Osc. Trans.
T4	584.4Ω tap ⓐ	2.9Ω SEC. 2	241-0011	A-8135 ③ ④	HVO-9 & MWC-1 ③ ⑤	TFD-13 & TW-6 ③ ⑥	D-24 & WC-11 ③ ⑦	232T1 ③ ⑧	Horiz. Output Trans.
	23Ω, 27.1 44.4Ω	0Ω							
T5	900Ω	9Ω	241-0008	A-8112	A-3036	TSO-9	A-98X ①	204T2 ③	Vert. Output Trans.
T6A	27Ω		100-0009						Horiz. Deflection Coils
B	44Ω								Vert. Deflection Coils
T7	2.2Ω		132-0002		MWC-2 ②				Width

① Drill one new mounting hole.
② Enlarge mounting hole.
③ Drill new mounting holes.
④ Connect original terminal #6 to new terminal #4, original #5 to new #3, original #4 to new #3, original #3 to new #1, original #1 to new #6, original #2 to new #7.
⑤ Connect original terminal #6 to new terminal #9, original #5 to new #8, original #4 to new #7, original #3 to new #1, connect coded red and blue terminals of MWC-1 across terminals #3 and #1. Connect AGC across coded terminals black and orange. If AGC fails to function properly, reverse black and orange terminals.
⑥ Connect terminal #8 to terminal #7, then connect original #6 to new #9, original #5 to new #6 and #7, original #4 to new #8 and #7, original #3 to new #1. Connect primary of TW-6 across terminals #1 and #3, connect AGC across secondary. If AGC fails to function properly reverse secondary.
⑦ Connect terminal #8 to terminal #7, then connect original #6 to new #9, original #5 to new #8 & #7, original #4 to new #5, original #3 to new #1, connect coded red and blue terminals across terminals #3 and #1. Connect AGC across coded black and orange terminals. If AGC fails to function properly reverse black and orange terminals.
⑧ Connect original terminal #6 to new terminal #10, original #5 to new #8, original #4 to new #7, original #3 to new #3, original #1 to new #1, original #2 to new #2.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA SYLVANIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T8	5KΩ	3.4KΩ	560Ω	.63Ω	143-0022	A-3877 ①	A-3019	RO-9 ①	S-5X ①	① Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA SYLVANIA PART No.	REPLACEMENT DATA VIKING PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1A	10"	PM	3.4Ω	539-1004	10J11	10A31	① Used in 372, and 377 series.
B	10"	PM	3.4Ω	539-1005 ①	10J11	10A31	② Used in 373 series.
C	12"	PM	3.4Ω	539-1205 ②	12J11	12A31	③ Used in 175 and 375 series.
D	6½"	PM	3.4Ω	539-0602 ③	6J4	6A1	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SYLVANIA PART No.	REPLACEMENT DATA MEISSNER PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA MILLER PART No.	NOTES
L1	Ant. Coils	0ΩCT	0Ω					Channel 2
L2	Fil. Choke	0Ω						
L3	Neutr. Coil	0Ω						
L4	RF, Mixer grid and Osc. coils	0Ω						
L5	Fil. Choke	0Ω						
L6	Feedback Coil	1.4Ω						
L7	RF Choke	0Ω						
L8	Conv. plate	0Ω	0Ω					
L9	1st Video IF shunt coil	0Ω		115-0001				Includes trap
L10	1st Video IF	.1Ω		119-0002				Includes trap
L11	2nd Video IF	.1Ω	.1Ω	119-0003			6232	Includes trap
L12	Fil. Choke	0Ω		147-0014	19-3001	TV-189	4604	.7 Microhenry
L13	3rd Video IF	.1Ω	.1Ω	119-0004			6233	Includes trap
L14	4th Video IF	.1Ω	.1Ω	119-0005			6234	
L15	Cathode trap	0Ω	0Ω	118-0011	20-1045		6219	
L16	5th Video IF	.1Ω	.1Ω	136-0001			6234 *	Includes IN105 crystal detector
L17	Series Peak. Coil	1.3Ω		118-0010			4612	9.6 Microhenries
L18A	Series Peak. Coil	7Ω		131-2010	19-3180	TV-185	6154	200 Microhenries
B	Shunt peak. Coil	9Ω		119-3300		TV-185	6155	330 Microhenries
L19	4.5MC trap	5.5Ω		130-0001	20-1005	TV-151	1470	
L20A	Series Peak. Coil	6.5Ω		131-2007	19-3125	TV-184	6153	135 Microhenries
B	Shunt Peak. Coil	7.5Ω			19-3250	TV-185	6181	250 Microhenries
L21	Sound IF	5.5Ω		130-0001	17-3400	TV-151	1469	
L22	RF Choke	3.6Ω		148-0012	19-3093	TV-181	6177	86 Microhenries
L23	Ratio Det.	12Ω	1.5ΩCT	128-0008	17-3497	TV-115	6205	Tertiary winding-.75Ω
L24	Horiz. Discrimator	39Ω	80ΩCT	128-0009	20-1400 †	TV-160 †	6194 †	Cathode winding-10Ω
L25	Ringing Coil	35Ω		146-0005	19-1575	TV-163	6210	
L26	RF Choke	1.3Ω		118-0010			4612	9.6 Microhenries
L27	RF Choke	1.3Ω		118-0010			4612	9.6 Microhenries
L28	RF Choke	1.3Ω		118-0010			4612	9.6 Microhenries

* Use adaptor plate and add LN105 crystal detector externally.
† Drill mounting holes.

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	SYLVANIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L29	.220A	21.5Ω	.5HY	145-0006	C-2328 ①			
L30	.124A	57Ω	1.1HY	145-0002	C-2326 ①	C-2996 ①	TR-1733 ①	C-21X ①

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			SYLVANIA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG S/B	1/4A	191-0014	487-008	313.250 (3AG S/B-1/4A)	351011	MDL 1/4	4406

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M2	Dial light	611-0047	# 47 bayonet- channel indicator
M3	HaloLight *	611-2100	
M4	Tuner	323-0028	VHF-chassis 1-518-3
M5	Tuner	323-0017	VHF-chassis 1-518-1, -2
M6	Tuner	323-0019	UHF-chassis 1-518-2
M7	Tuner	323-0031	VHF-chassis 1-518-2
M8	Crystal		UHF Mixer 1N82
M9	Crystal		Video detector 1N105
M10	Switch		UHF-VHF switch -used on UHF models only
M11	Focus magnet	400-0014	PM-includes centering lever and screw driver focus adj.
M12	Ion trap	400-0013	
M13	Correction magnet	400-0016	(2) used
	Dial	722-0027	UHF chassis 1-518-2
	Dial	722-0028	UHF dummy chassis 1-518-1 & 2
	Safety glass	710-0009	175-18 model
	Safety glass	710-0012	Models 372-373-375-376-377
	Knob	743-0023	Channel Selector
	Knob	740-0029	Fine tuning
	Knob	744-0021	HaloLight * model 175-18
	Knob	744-0025	HaloLight * models 372-373-375-376-377
	Knob	744-0023	Brightness
	Knob	744-0022	Off-on volume

* Sylvania Trademark

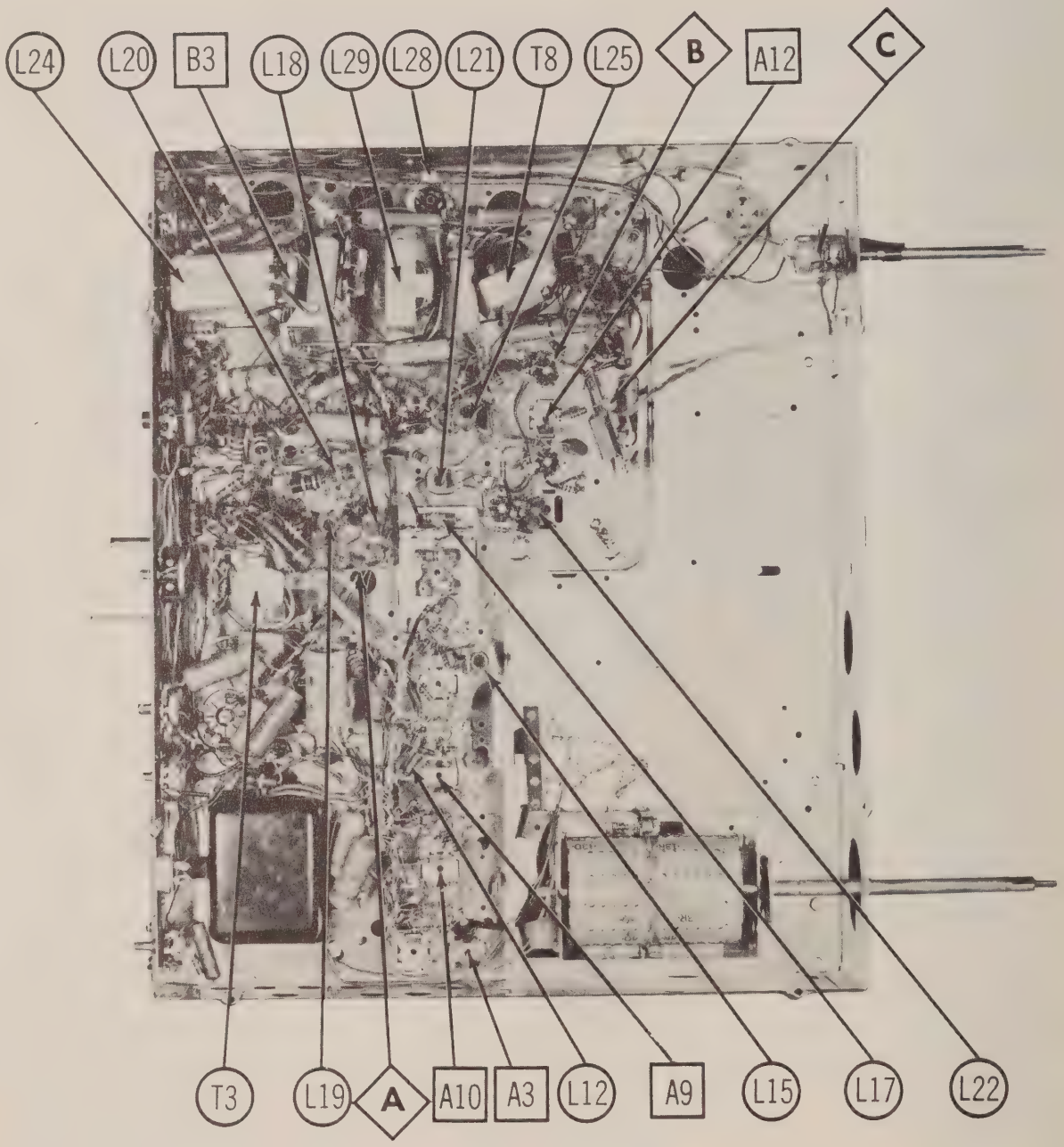
SYLVANIA

MODELS 175-18, 372, 373, 375, 376, 377 Series (Ch. 1-518-1, -2, -3)

ALTERNATE TUNER SCHEMATIC

VHF TUNER USED ON CHASSIS 1-518-1-2
UHF TUNER USED ON CHASSIS 1-518-1

A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1954



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

TROUBLE SHOOTING AIDS (cont)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

POWER

DEAD SET

If filaments fail to light, check AC interlock assembly, switch on volume control and T1. If filaments light, substitute V24 and V25. Check B+ filter and decoupling network components.

SMALL AND/OR DIM PIX

Substitute V24 and V25. Check B+ filter and decoupling network components.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check fuse M1. Check by substitution V20, V21, V22 and V23. Check waveform W19.

If Satisfactory	If Unsatisfactory
Check R124, T4, T6A, R122, C97 and other associated components.	Check C93, C95, C96, R114, R117, and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V20, V21, V22, V23, and V25. Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check by substitution V20, V21, V22, V23 and V25. Check R124, R122, C97, T3, T5A, picture tube and other associated components for failure or change of value.

GENERAL

RASTER SOUND NO PIX

Follow procedure outlined under "Loss of Video".

RASTER NO SOUND NO PIX

Check by substitution V1, V2, V3, V4, V5 and V6. Check video detector assembly. Check components associated with the video IF strip.

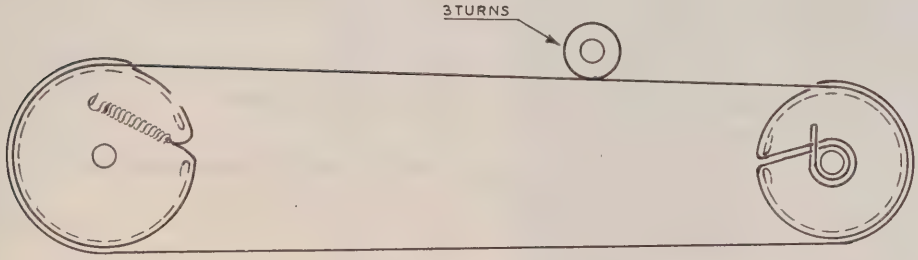
NO RASTER NO SOUND

Follow procedure outlined under "Dead Set".

INTERMITTENT STREAKS

Check signal at W1 for interference pulses. Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.



UHF DRIVE CORD STRINGING

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

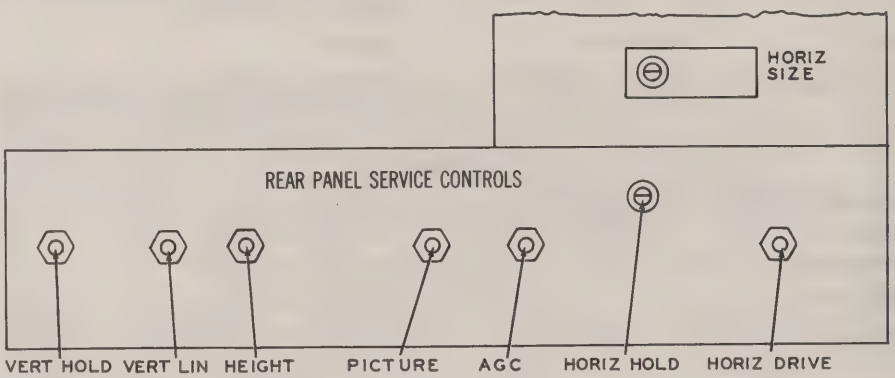
PICTURE TUBE SAFETY GLASS CLEANING

Remove three metal screws. Remove metal strip across top of safety glass. Remove metal strip and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Adjust the horizontal hold slug (L24) until picture synchronizes horizontally. If synchronization cannot be obtained by the above adjustment see Horizontal Sweep Circuit Adjustments.on page 13.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L23) located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for horizontal sweep circuit protection. (For location, see tube placement chart).

CENTERING

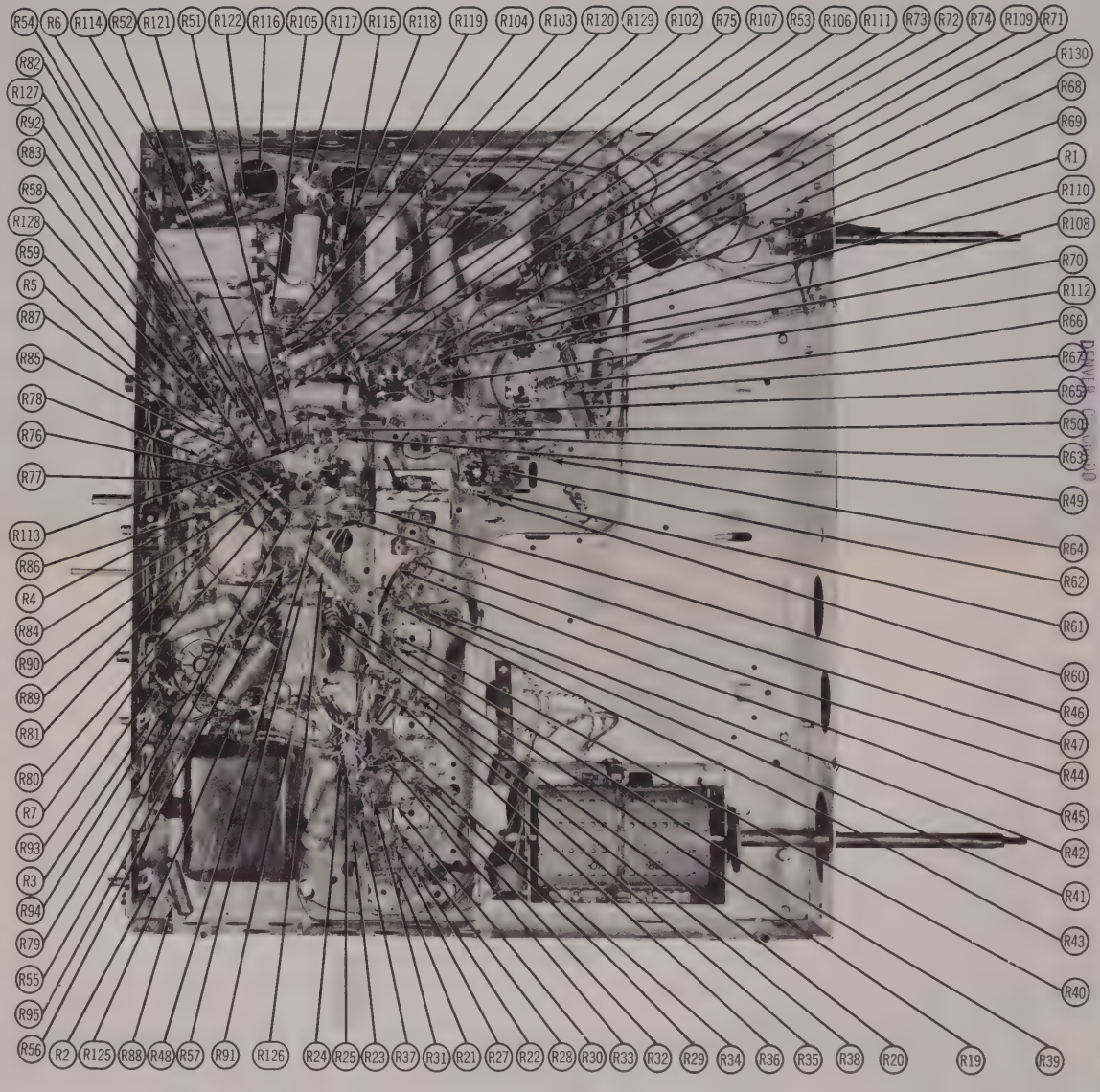
Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

ANTI-PIN CUSHION ADJUSTMENT

Reduce the picture size so that the sides of the raster are visible, and position the magnets so that all sides are straight lines and the corners are at right angles.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Disconnect built-in antenna (built-in antenna mounted on rear cover).
3. Disconnect speaker.
4. Disconnect HaloLight plug.
5. Loosen 2 nuts at top front of CRT.
6. Remove 4 chassis bolts. Remove chassis.
7. Remove 4 speaker nuts. Remove speaker.

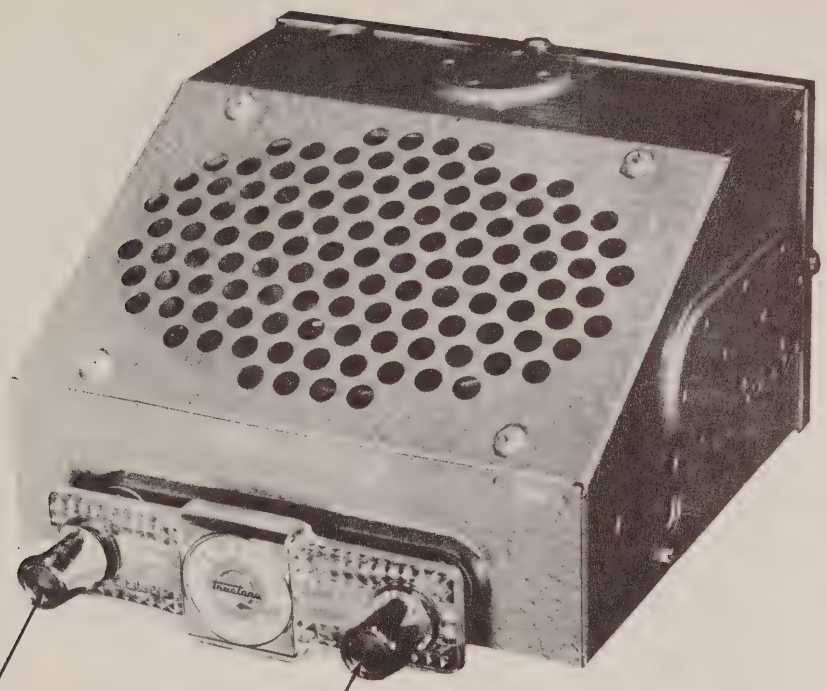


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

L. F. BLANKENSHIP

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST
DENVER, COLORADO

TRUETONE
MODELS D-4321, A



TRUETONE
MODELS D-4321, A

TRADE NAME	Truetone Models D-4321, A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Battery Operated Automobile Superheterodyne Receiver for Universal or Custom Installations.
TUBES (Five)	Types 12BD6 RF Amp., 12BE6 Conv., 12BD6 IF Amp., 12AV6 Det.-AVC-AF Amp., 12AS5 Audio Output
POWER SUPPLY	12 Volt Storage Battery — RATING 2.8 Amp. @ 12 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Set requires 12 volt storage battery or equivalent.
Volume control should be at maximum position. Output of signal generator should be no higher tha necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side thru .1MFD to pin 7 (grid) of 12BE6 (V2). Low side to chassis.	455KC (400~Mod)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum deflection.
2.	50MMF	High side thru 50MMF to antenna receptacle, Low side to chassis.	1620KC	"	"	A5	"
3.	"	"	1300KC	Tune to 1300KC signal	"	A6, A7	Attenuate signal generator for low signal level. Adjust for maximum deflection.
4.	The entire tuning core assembly is a complete unit and has been properly aligned and sealed at the factory. If replacement of an individual part becomes necessary, the complete unit must be replaced.						

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS

TRUETONE MODEL D-4321

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	12BD6	7BK	7BK	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	12BD6	12BD6	7BK	
V4	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V5	Audio Output	12AS5	12AS5	7CV	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■30	200		AFH3-109		CO83			R1460	
B	▲20	200								
C	40	25								
C2	90		8F-21949							
C3	.0047	200	8D-21819	P285-0047	D6-472	PJ6D5	GP2-333-472	PT625	2TM-D5	
C4	.047	200	8D-21823	P285-047	DF-503	PJ2S5		PT415	2TM-S47	
C5	10		8G-19502	SII0N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C6	47		8G-12198	SI47	D6-470		GP2K-470	UC-5447	5GA-Q47	
C7A	100		*201-15005	*PA-97	*PC-50	TM5T1	*1403-01	UC-531	*100C1	
B	100					TM5T1		UC-531		
C8	.0047	200	8D-21819	P285-0047	D6-472	PJ6D5	GP2-333-472	PT425	2TM-D5	
C9	.01	200	8D-21820	P285-01	D6-103	PJ2S1	GP2-333-103	PT411	2TM-S1	
C10A	♦									
B	5000		♦17A-21742	♦PA-112-1	♦PC-70		♦1406-01		♦104C4	
C	♦									
C11	.01	400	8D-21828	P485-01	D6-103	PJ4S1	GP2-333-103	PT411	4TM-S1	
C12	1000		8G-20879	EF-061						
C13	.047	400	8D-21831	P485-047	DF-503	PJ2S5		PT415	2TM-S47	
C14	.5	100	8D-19810	VHC-36		MP2P5		RF-480	HC-3	
C15	.5	100	8D-19810	VHC-36		MP2P5		RF-480	HC-3	
C16	.5	100	8D-19810	VHC-36		MP2P5		RF-480	HC-3	
C17	.004	1000	8D-22532	P1088-004		PTE16D4		PT1624	MB-D4	
C18	220	500	8F1-233	1468-00025		5W5T25		MC-240	1FM-325	

* Items C7A, C7B and R7 are combined in one unit.
♦ Items C10A, C10B, C10C, R10A, R10B are combined in one unit.
When replacing items separately items C10A and C10C should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	A-10-A-21722	Q18-133X	AK-80	AB-60	UT429	Volume tapped at 60K
B	Shaft		Not Req.	NQ	RS-3/16	AK-8	DS-37	Attach to R1A
C	Switch		Not Req.	76-1	SWB	KB-1	US-26	Attach to R1A

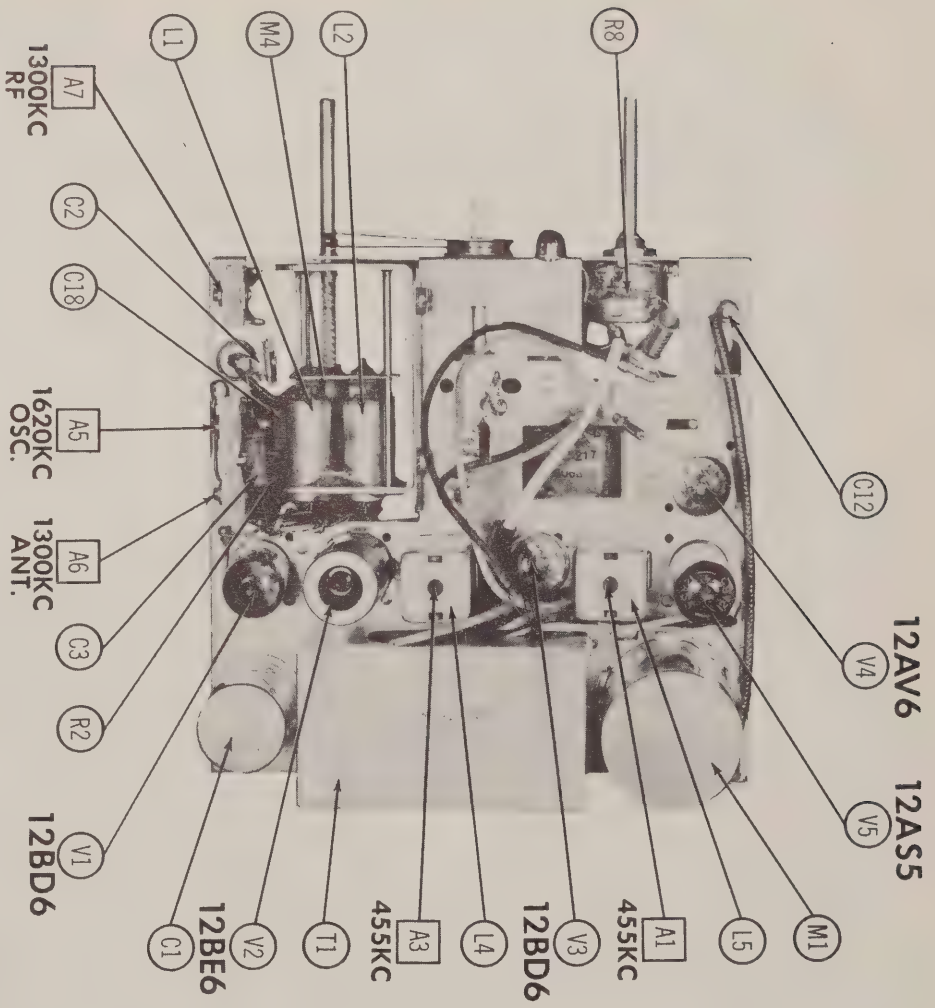
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	NOTES
R2	1Meg	½	9B1-98	BTS-1Meg	
R3	220Ω	½	9B1-54	BTS-220	
R4	1Meg	½	9B1-98	BTS-1Meg	
R5	2.2Meg	½	9B1-102	BTS-2.2Meg	
R6	220Ω	½	9B1-54	BTS-220	
R7	47KΩ	½	* 201-15005	BTS-47K	
R8	22KΩ	½	9B1-78	BTS-22K	
R9	6.8Meg	½	9B1-108	BTS-6.8Meg	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	NOTES
R10A	470KΩ	½	♦17A-21742	BTS-470K	
B	470KΩ	½		BTS-470K	
R11	220Ω	½		BTS-220	
R12	1200Ω	2		BTB-1200	
R13	10KΩ	½	9B1-75	BTS-10K	
R14	150Ω	1	9B2-52	BTA-150	
R15	150Ω	1	9B2-52	BTA-150	
R16	47KΩ	½		BTS-47K	

* Items R7, C7A, C7B are combined in one unit.
♦ Items R10A, R10B, C10A, C10B, C10C are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	12VAC @1.8A	300VCT ,067A			12A22385		P-4052		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	4.6KΩ	3.3Ω	300Ω	.45Ω	12C21731					

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	VIKING PART No.	QUAM PART No.	
SP1	4 x 6"	PM	3.3Ω	18A22125	46J6	46A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	12Ω						Part of tuning assy., tuner part #13F-21922
L2	RF Coil	12Ω						Part of tuner
L3	Osc. Coil	.5Ω	5Ω					Part of tuner
L4	Input IF	14Ω	14Ω	13B-17731	16-6758	BC-352	12-C1	
L5	Output IF	14Ω	14Ω	13B-17731	16-6758	BC-353	12-C2	
L6	Vibrator Hash Choke	0Ω		16M-19921			5221	2.5 Microhenries
L7	Fil. Choke	0Ω		16M-19921			5221	2.5 Microhenries
L8	RF Filter Choke	12Ω		201-16379	19-3660		4650	640 Microhenries

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				TRUETONE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Synchronous	12V	115∿	21A-22386	5614-12		5614-12	

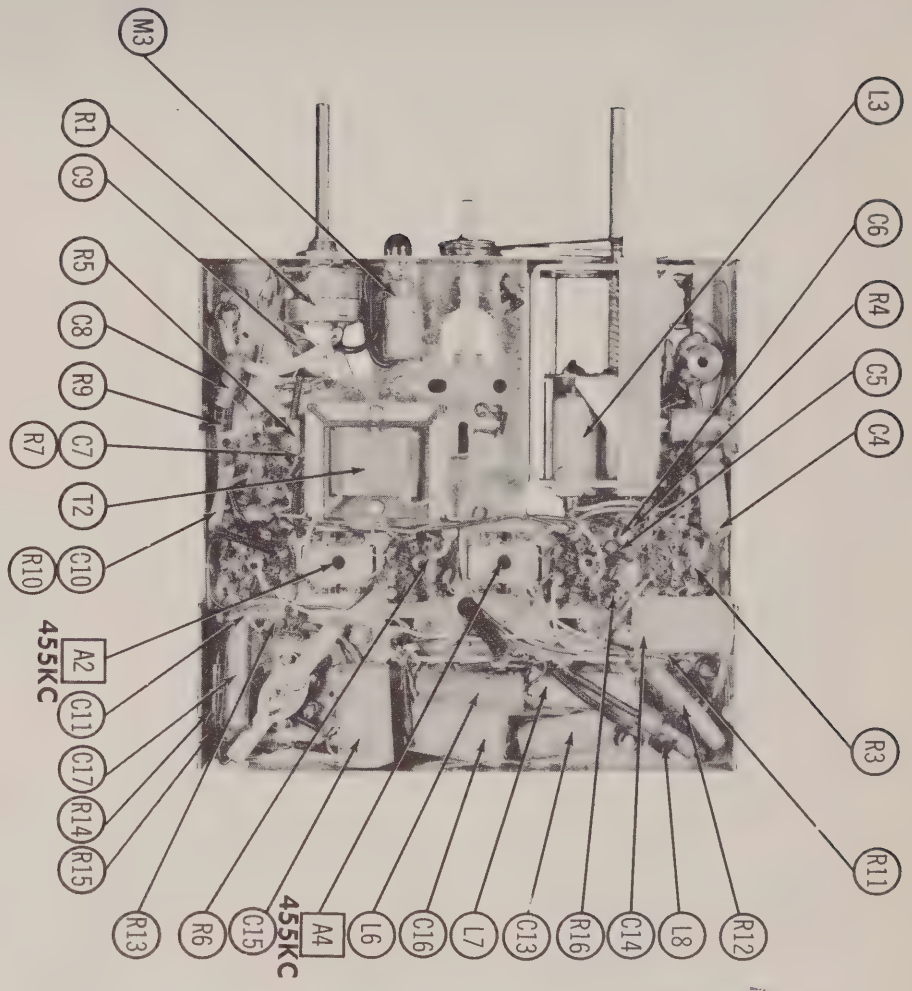
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			TRUETONE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A	46B-17993	14A-21919	307014 (SFE-14A)	155014	SFE14	HD1

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M3	Dial light	46A-22534	# 1815 bayonet
M4	Tuning assembly	13F-21922	
A5, A6 A7	Trimmer cap	8E-21728	3 used antenna, R. F. & Osc.
	Knob	4B-21985	2 used
	Dial scale	5M-21796	

CHASSIS—BOTTOM VIEW



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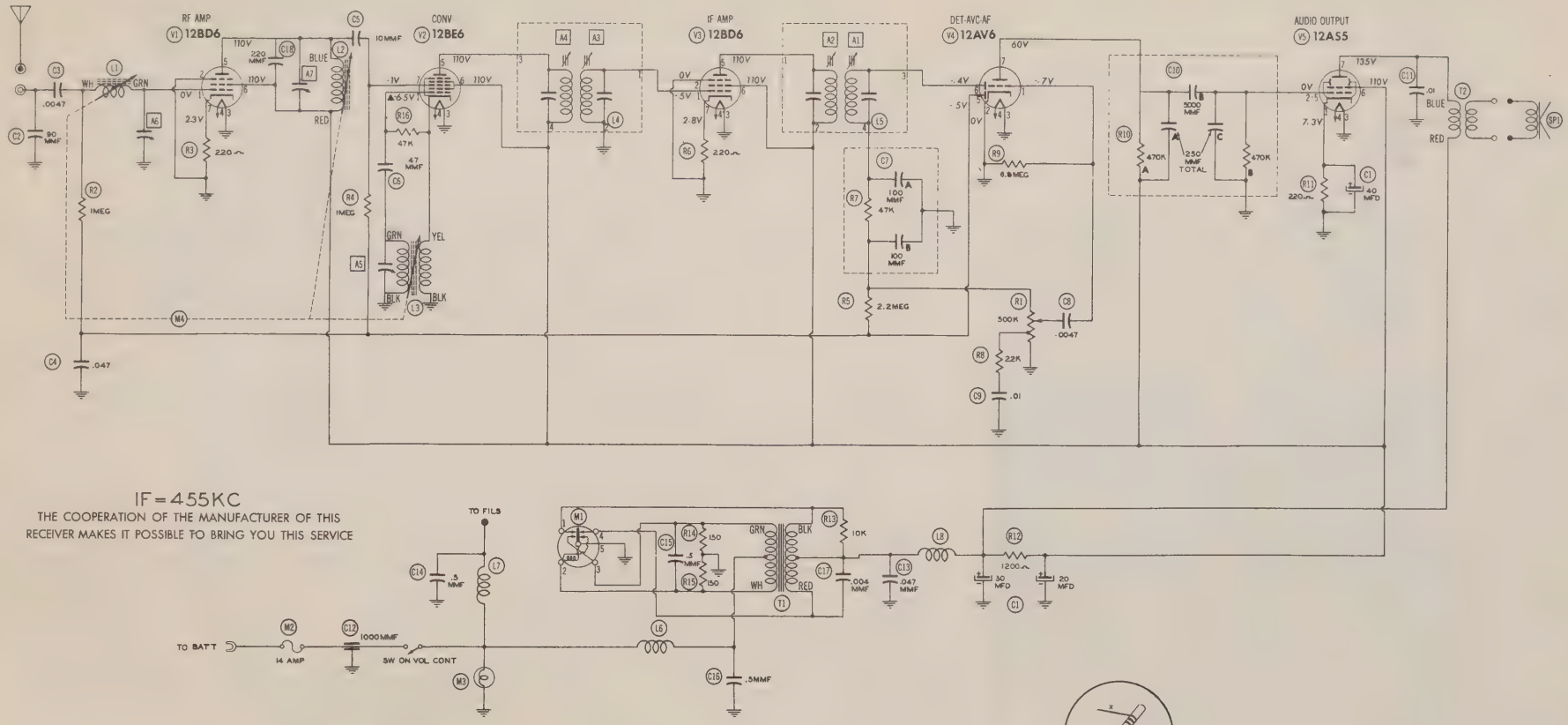


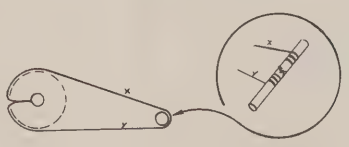
IF = 455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BD6	3.7Meg	0Ω	0Ω	2.5Ω	†1.2KΩ	†1.2KΩ	220Ω
V 2	12BE6	47KΩ	.5Ω	0Ω	2.5Ω	†1.2KΩ	†1.2KΩ	3.7Meg
V 3	12BD6	2.7Meg	0Ω	0Ω	2.5Ω	†1.2KΩ	†1.2KΩ	220Ω
V 4	12AV6	6.8Meg	0Ω	0Ω	2.5Ω	550KΩ	2.7Meg	†470KΩ
V 5	12AS5	220Ω	470KΩ	0Ω	2.5Ω	470KΩ	†1.2KΩ	†310Ω

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM T1 SECONDARY CENTER TAP



DIAL CORD STRINGING

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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229-16

1 - DC Voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

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MODELS 2D2301A, 2D2302A

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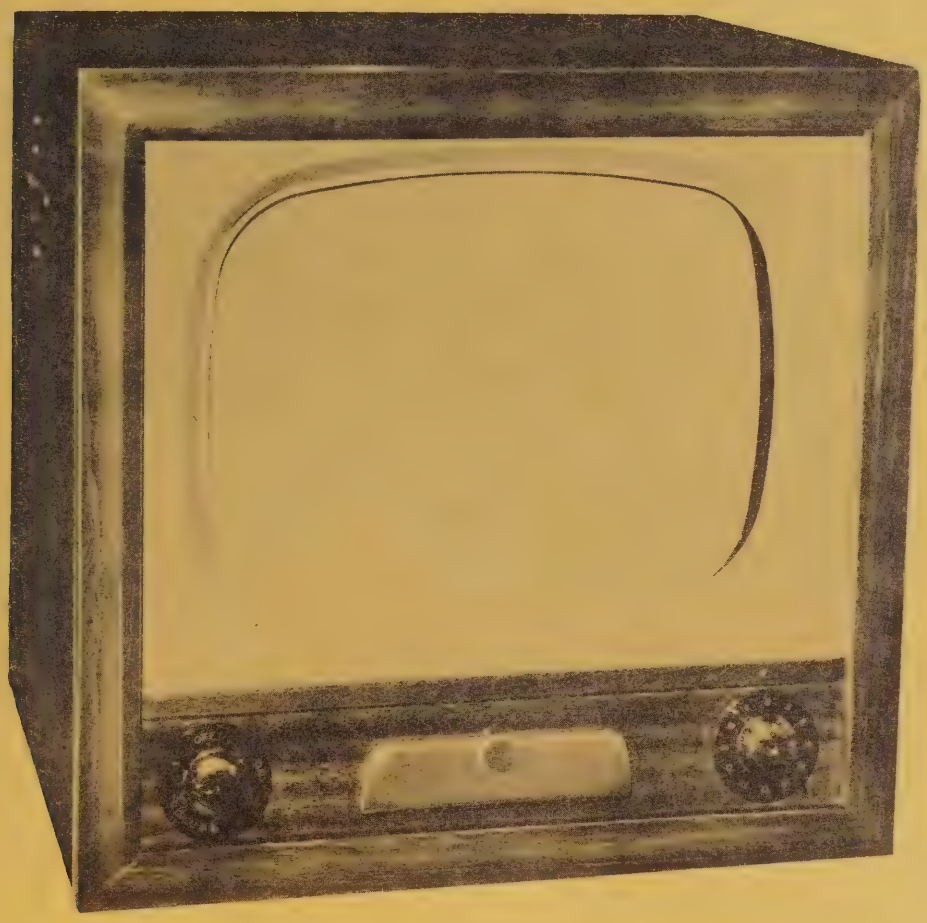

MODEL 2D2301A

TRUETONE
MODELS 2D2301A, 2D2302A

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TRUETONE
MODELS 2D2301A, 2D2302A

TRUETONE MODEL 2D2301A

TRADE NAME	Truetone Models 2D2301A, 2D2302A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Television Receiver.
TUBES	Twenty-one
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.46 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13, Video IF 26.0MC, Sound IF 21.5MC (Intercarrier)

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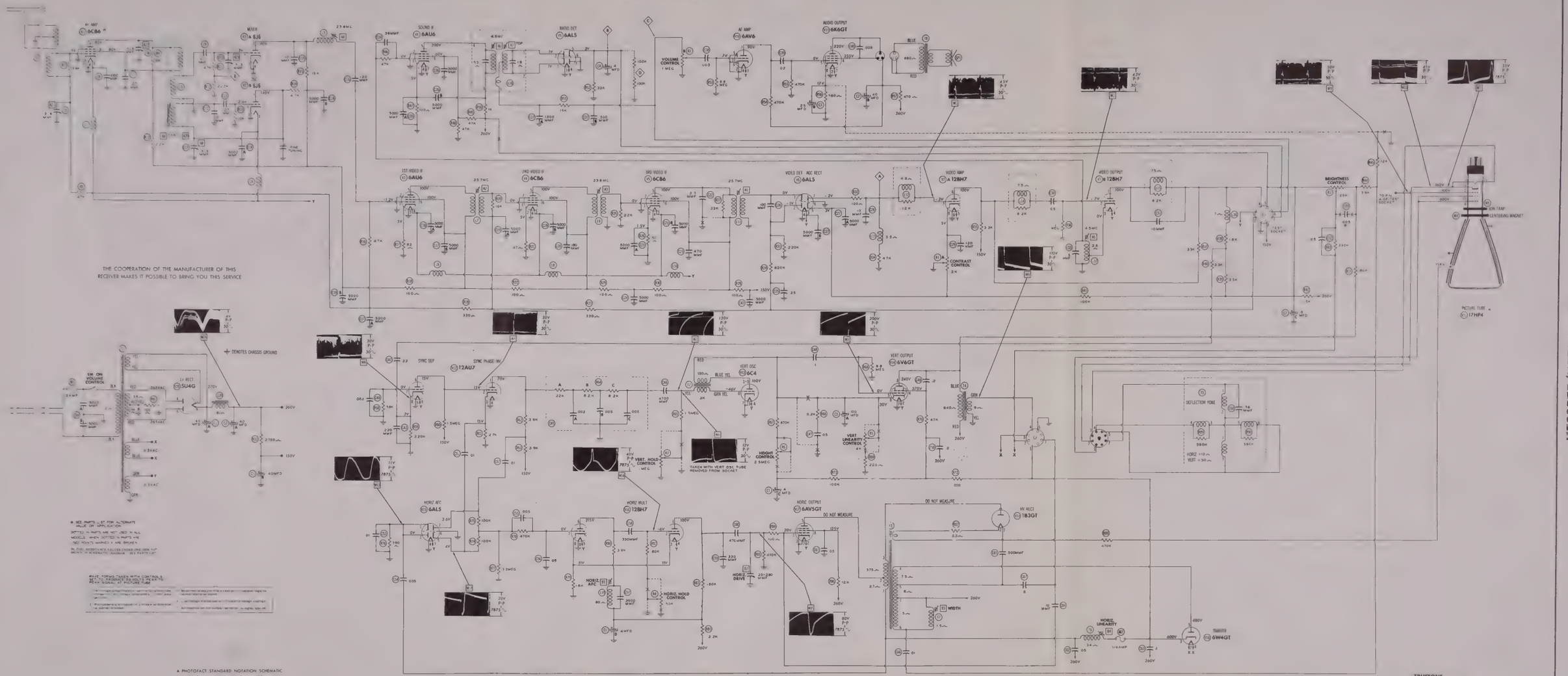

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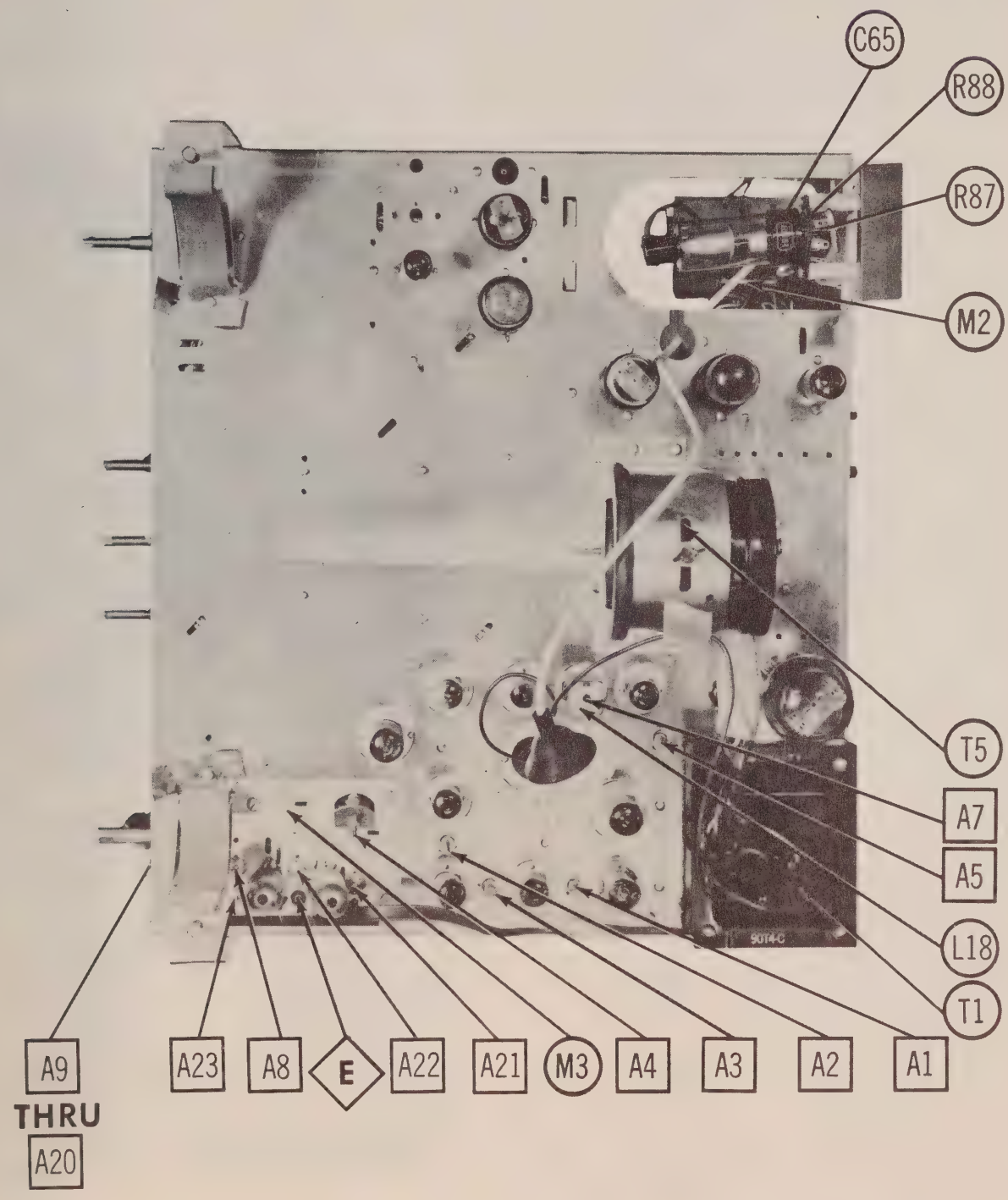

For tube location see
Tube Placement chart page 5.

CHASSIS TOP VIEW

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CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

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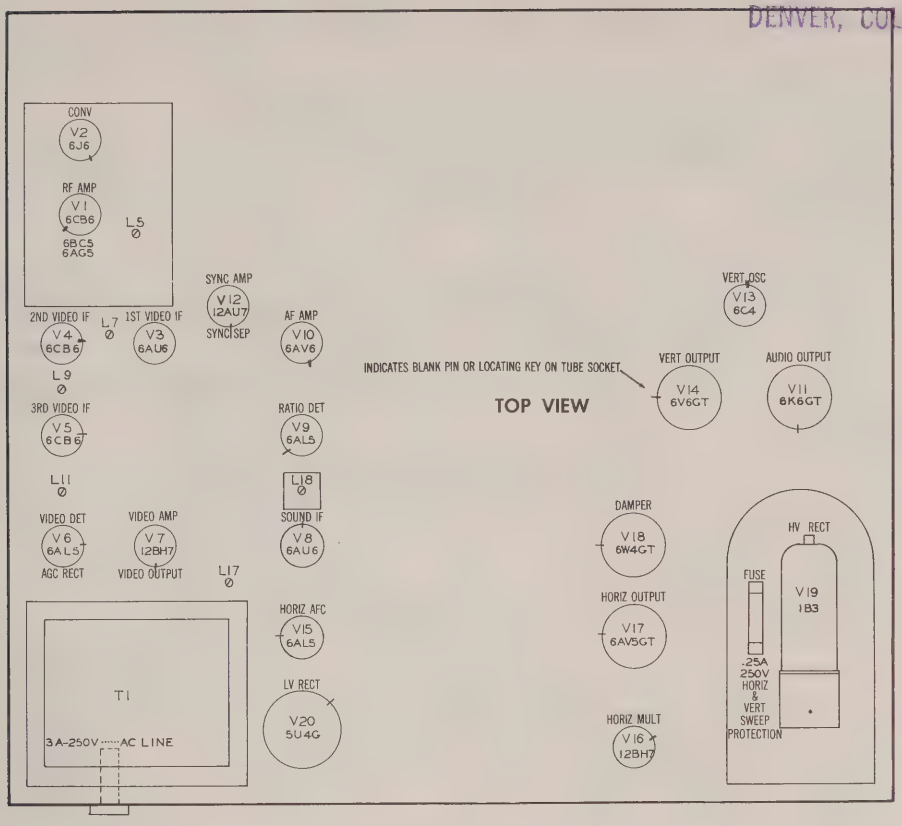
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V20, Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6, V7
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V7, V21
Has pic, no sound -V8, V9, V10, V11

SYNC FAILURE
No vert. sync - V12, V13, V14
No horiz. sync - V12, V15, V16
No vert. or horiz. sync -V12

SWEEP FAILURE
No raster, has sound - V16, V17, V18, V19, V21, Fuse (M2)
No vertical deflection - V13, V14
Poor vert. linearity or foldover -V13, V14
Poor horiz. linearity or foldover - V16, V17, V18
Narrow picture - V16, V17, V18, V19, V20
Vert. off freq. - V12, V13, V14
Horiz. off freq. - V12, V15, V16

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to pin 2 of the test socket. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	25.7MC	Any	DC probe to point (A). Common to chassis.	A1, A2	Adjust for maximum deflection. Attenuate signal generator to maintain less than 2 volts at VTVM.
2.	"	"	23.6MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.5MC 22.8MC 26.0MC	Any	Vert. Amp. to point (A). Low side to chassis.		Check for response curve similar to Fig.1. If necessary, retouch A1 thru A4 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic.
Set contrast control at maximum contrast position.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B). Common to chassis.	A5, A6	Adjust for maximum deflection.
5.	"	"	"	"	DC probe to point (C). Common to point (D).	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B). Low side to chassis.	A5, A6	Disconnect stabilizer capacitor C4. Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
5.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A7	Reconnect stabilizer capacitor C4. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

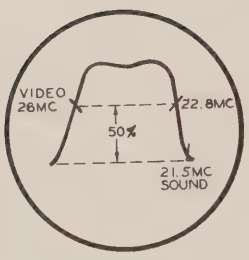


FIG.1

FIG.2

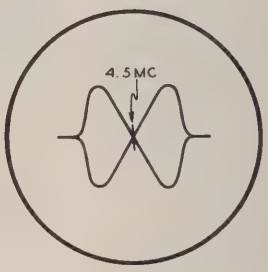


FIG.3

ALIGNMENT INSTRUCTIONS (cont)

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OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect the bias battery as under video IF alignment.
Complete oscillator alignment may not be necessary.
If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A8. It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct and individual channel.
If adjustment of A8 will not bring all the channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (A). Low side to chassis.	A9	Adjust to place video marker at 50% on low frequency slope of response curve as in Fig. 4.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A10	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A11	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A12	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A13	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A14	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A15	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A16	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A17	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A18	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A19	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A20	

RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to point (E). Low side to chassis.	A21 A22 A23	Adjust for response curve similar to Fig. 5.
8.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 5. If markers fall below 70% on any channel make compromise adjustments of A21, A22 and A23 with channel switch set to that channel, then recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

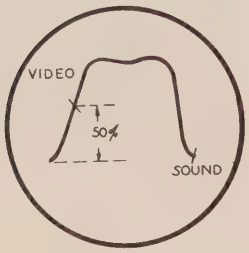


FIG.4

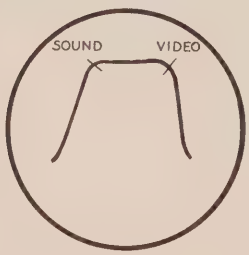
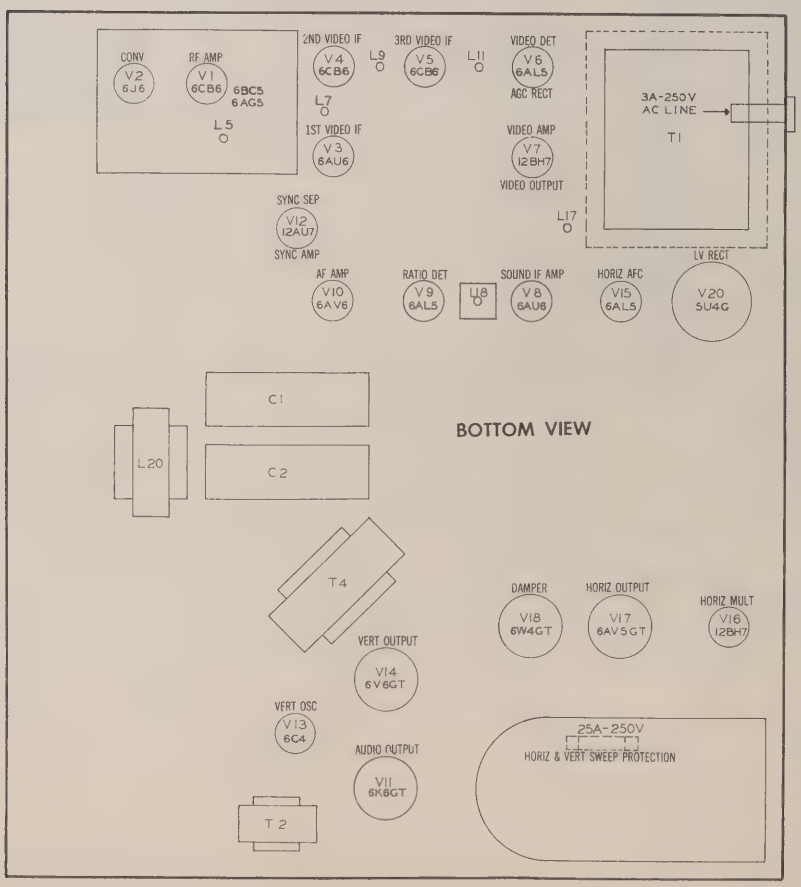


FIG.5

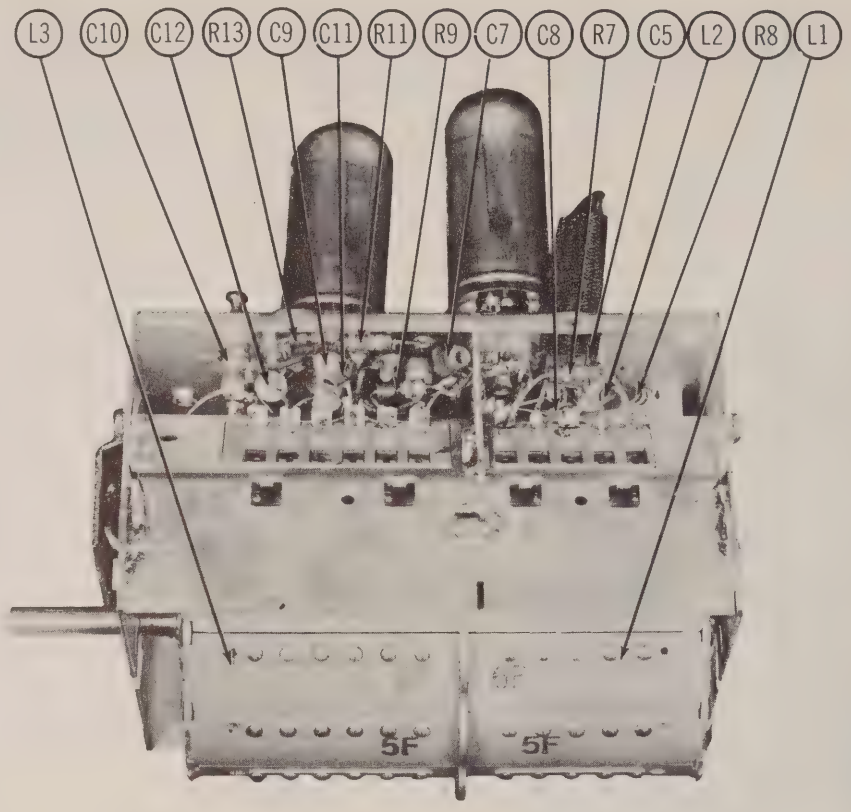
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	1.1Meg	0Ω	.1Ω	0Ω	† 5.5KΩ	† 5.5KΩ	0Ω		
V 2	6J6	† 8KΩ	† 18KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6AU6	1.1Meg	0Ω	0Ω	.1Ω	† 3.2KΩ	† 3.2KΩ	82Ω		
V 4	6CB6	1.1Meg	47Ω	.1Ω	0Ω	† 3.2KΩ	† 3.2KΩ	0Ω		
V 5	6CB6	1Ω	150Ω	.1Ω	0Ω	† 3.1KΩ	† 3.1KΩ	0Ω		
V 6	6AL5	.3Ω	220KΩ	.1Ω	0Ω	† 100KΩ	0Ω	4.8KΩ		
V 7	12BH7	† 6.6KΩ	1Meg	.1Ω	.1Ω	.1Ω	† 6KΩ	4.7KΩ	1.3KΩ	0Ω
V 8	6AU6	47KΩ	0Ω	.1Ω	0Ω	† 2.5KΩ	† 35KΩ	100Ω		
V 9	6AL5	1Meg	1Meg	0Ω	.1Ω	33KΩ	0Ω	0Ω		
V 10	6AV6	6.8Meg	0Ω	.1Ω	0Ω	0Ω	0Ω	† 470KΩ		
V 11	6K6GT	0Ω	0Ω	† 1.2KΩ	† 530K	470KΩ	† 60Ω	.1Ω	560Ω	
V 12	12AU7	† 10.6K	† 1.5Meg	2.7KΩ	0Ω	0Ω	† 1.5Meg	56KΩ	220KΩ	.1Ω
V 13	6C4	▲ 2.4Meg	▲ 2.4Meg	0Ω	.1Ω	▲ 2.4Meg	2.1Meg	0Ω		
V 14	6V6GT	1.9KΩ	.1Ω	† 900Ω	▲ 57KΩ	6.8Meg	▲ 2.4Meg	0Ω	1.9KΩ	
V 15	6AL5	390Ω	390Ω	.1Ω	0Ω	3.4Meg	0Ω	3.4Meg		
V 16	12BH7	† 180KΩ	200KΩ	1.8KΩ	.1Ω	.1Ω	† 6.2KΩ	3.8Meg	1.8KΩ	0Ω
V 17	6AV5GT	470KΩ	.1Ω	0Ω	INF	▲ 61Ω	INF	0Ω	† 12KΩ	
V 18	6W4GT	† 60Ω	INF	4Meg	† 68Ω	† 75Ω	INF	† 410KΩ	† 410KΩ	
V 19	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								TOP CAP ▲ 435Ω
V 20	5U4G	.1Ω	22KΩ	410KΩ	38Ω	INF	34Ω	† 410KΩ	22KΩ	
V 21	17HP4	† 410KΩ	† 6.6KΩ	PIN 6 ▲ 0Ω	PIN 10 ▲ 0Ω	PIN 11 † 410KΩ	PIN 12 † 410KΩ			

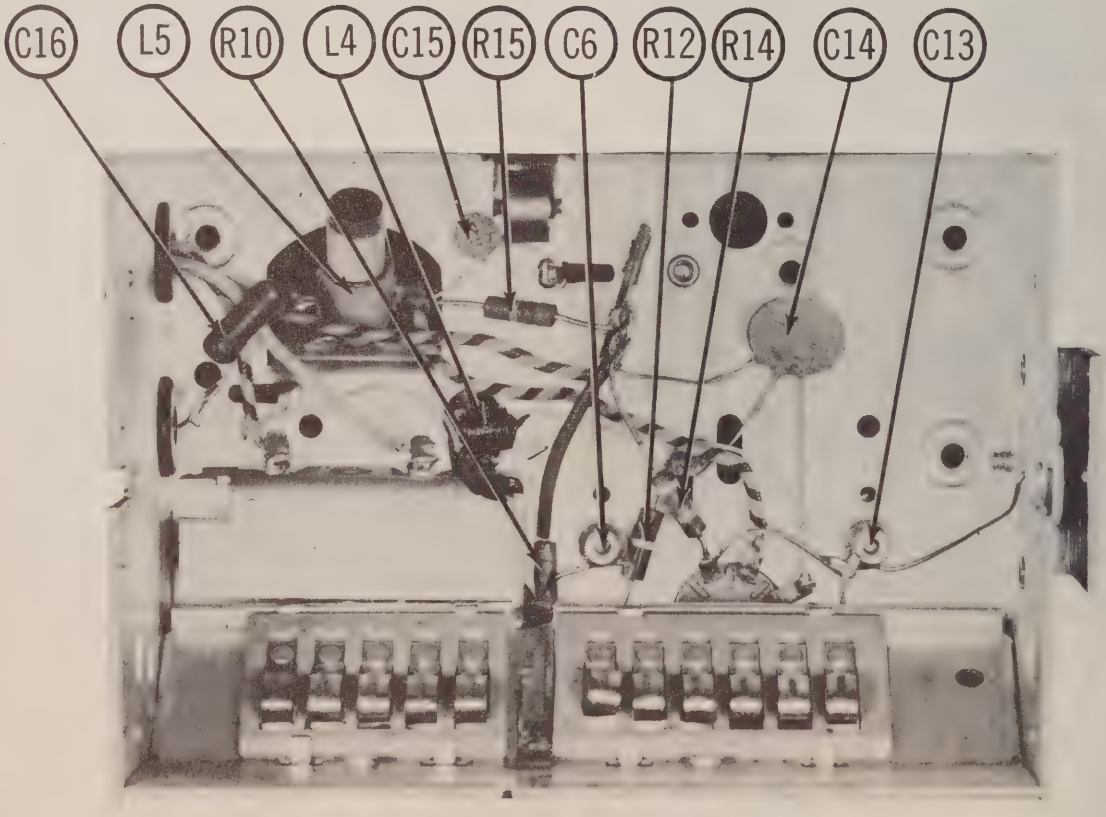
† MEASURED FROM PIN 8 OF V20.
▲ MEASURED FROM PIN 3 OF V18.



TUBE PLACEMENT CHART

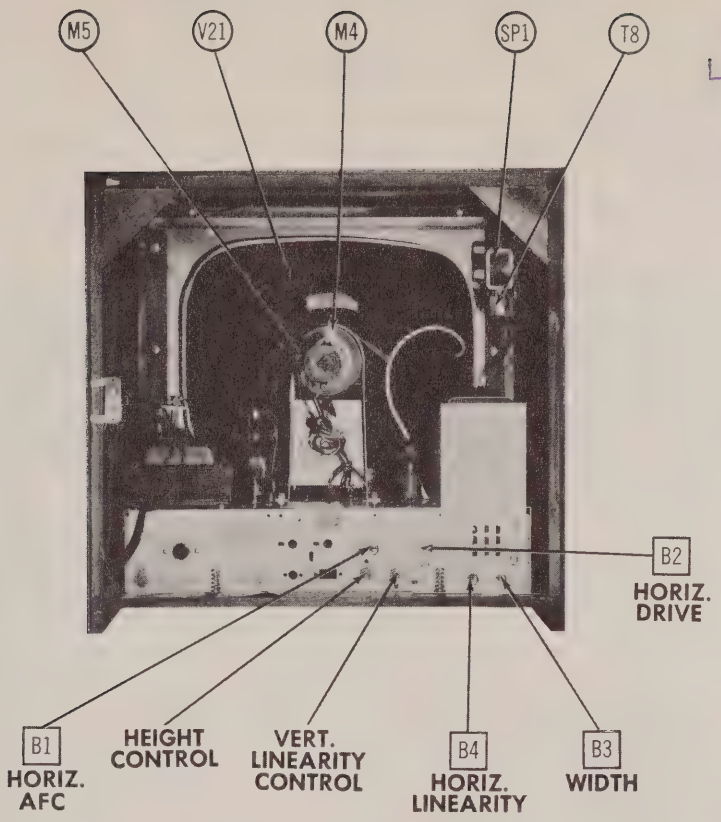


RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

PROPERTY OF
L. F. BLANKENSHIP
3024 MEADE ST.
DENVER, COLORADO



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the horizontal AFC slug (B1) until the picture synchronizes horizontally. Check setting by switching off channel and back again.

If necessary retouch B1 until picture returns to sync immediately on making above check.

Adjust the horizontal drive trimmer (B2) counter clockwise as far as possible without the presence of vertical white lines or compression of the center of the picture.

Adjust the width slug (B3) for a picture that is slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss Of High Voltage"

INSUFFICIENT SWEEP

Check by substitution V16, V17, V18 and V20. Check adjustments B2, B3 and B4. Check waveform W15.

If Satisfactory	If Unsatisfactory
Check R86, C61, C62, C63, T3, T5A and other associated circuit components.	Check C58, C59, C60, R79, R82, R85 and other associated circuit components.

DRIVE LINES

Check adjustment of horizontal drive (B2). Check by substitution V16, V17 and V18. Check T3, T5A, C62, C63, C59, C60 and other associated circuit components.

COMPRESSED LEFT SIDE

Check by substitution V17 and V18. Check horizontal output and damper circuit components especially T3 and T5A.

FOLDS

Follow procedure outlined under "Drive Lines".

XMAS TREE EFFECT

Substitute V16. Check C57, C58, L19 and other associated components.

VERTICAL

LOSS OF SWEEP

Substitute V13 and V14. Check waveform W8.

If Satisfactory	If Unsatisfactory
Check T4, T5B, R70, R72 and other associated circuit components.	Check C47, C48, R68, R73, T2 and other associated components.

INSUFFICIENT SWEEP

Check adjustment of height and vertical linearity controls. Proceed as outlined under "Loss Of Sweep".

COMPRESSED AT TOP

Check by substitution V13 and V14. Check R66, R67, R68, C47, C48, T2 and other associated components.

COMPRESSED AT BOTTOM

Check by substitution V13 and V14. Check T4, T5B, C3A and other associated circuit components.

FOLDS

Substitute V13 and V14. Check components associated with these stages for failure or change of value.

SYNC

LOSS OF HORIZONTAL AND VERTICAL SYNC

Substitute V12. Check components associated with V12 for failure or change of value.

LOSS OF HORIZONTAL SYNC - VERTICAL SYNC SATISFACTORY

Check by substitution V15 and V16. Check associated circuit components especially C51, C52, C53, C54, C57, C58, C59, R74, R75, R76, R83 and L19.

LOSS OF VERTICAL SYNC - HORIZONTAL SYNC SATISFACTORY

Check by substitution V12 and V13. Check waveform W6.

If Satisfactory	If Unsatisfactory
Check components associated with V13.	Check vertical integrator network, C46 and other associated components.

HORIZONTAL BENDING

Check by substitution V15, V16 and V17. Check horizontal AFC filter network (C55, C56, R77 and R78) for failure or change of value.

VIDEO

LOSS OF VIDEO

Substitute V7. Check picture tube and associated circuit components.

SOUND BARS (4.5 MC BEAT)

Check adjustment of fine tuning. Check adjustment A5. Check video IF alignment.

POOR CONTRAST

Check by substitution V6 and V7. Check picture tube and other associated components.

NEGATIVE PIX

Substitute V6 and V7. Check AGC network. Check picture tube and other associated components.

SMEAR

Check by substitution V6 and V7. Check C30, L14, L15, R35, R36, R38, R39, R37, picture tube and other associated circuit components.

WIDE BLACK BAR ACROSS PIX

Check V1, V2, V3, V4, V5, V6 and V7 for heater to cathode leakage. Check C1A and C2A for open.

AUDIO

WEAK OR NO SOUND

Check by substitution V8, V9, V10 and V11. Check stages of V10 and V11 using an audio signal generator. Apply signal across R53.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alignment and components.	Check components associated with V10 and V11.

BUZZ

Adjust A7 for minimum buzz. If buzz is still objectionable, substitute V9 and realign audio IF and ratio detector stages. Check C4.

DISTORTED

Follow procedure outlined under "Weak Or No Sound".

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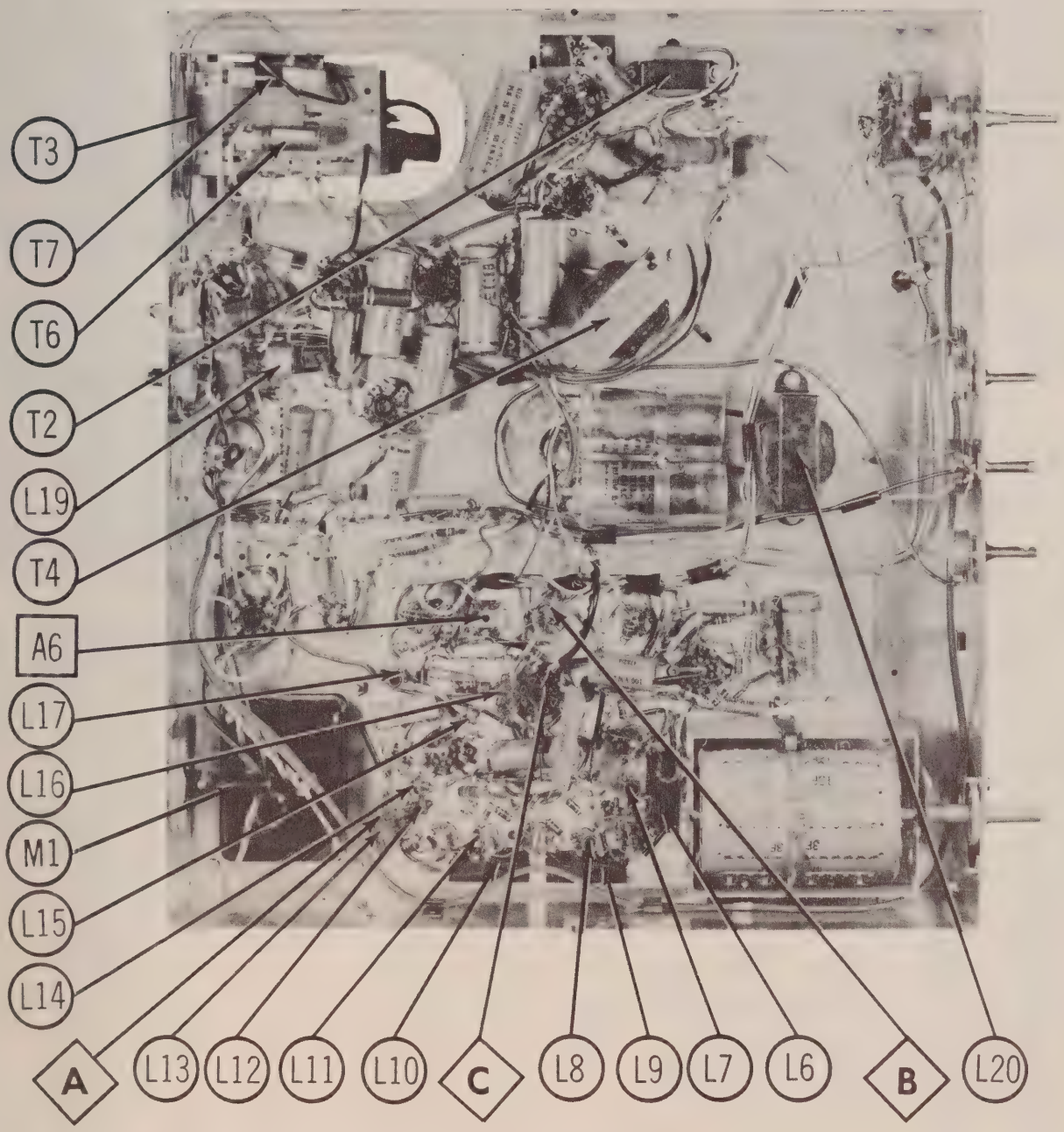
3924 MEADE ST.
DENVER, COLORADO



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1A	RF Amplifier	6CB6	6CB6	7CM	
B	RF Amplifier	6BC5	6BC5	7BD	
C	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Detector AGC Rectifier	6AL5	6AL5	6BT	
V7	Video Amplifier-Video Output	12BH7	12BH7	9A	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Detector	6AL5	6AL5	6BT	
V10	AF Amplifier	6AV6	6AV6	7BT	
V11	Audio Output	6K6GT	6K6GT	7S	
V12	Sync Separator Sync Phase Inv.	12AU7	12AU7	9A	
V13	Vert. Oscillator	6C4	6C4	5BG	
V14	Vert. Output	6V6GT	6V6GT	7S	
V15	Horiz. AFC	6AL5	6AL5	6BT	
V16	Horiz. Mult	12BH7	12BH7	9A	
V17	Horiz. Output	6AV5GT	6AV5GT	6CK	
V18	Damper	6W4GT	6W4GT	4CG	
V19	HV Rectifier	1B3GT	1B3GT	3C	
V20	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: TRUETONE PART No.	SYLVANIA PART No.	GENERAL ELECTRIC PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V21A	17HP4	17HP4	17HP4 /17RP4	17HP4	I2C	
B	21FP4	21FP4	21FP4		I2C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C1A	▲40	450	31T10	AFH3-43		CO34		FP376.8	R1320	
B	▲40	450		PR8450/4		ER445		TC70		
C	▲4	450								
D	4	450								
C2A	40	450								
B	40	450	31T12	AFH3-43		CO34		FP376.8	TVL-3785	
C	8	450								
C3A	100	50	31T11	PR850/100		BRH50L		TC3501	R1319	R1w
B	25	50		PR850/25		BR255		TC36		
C4	4	100	31T15	PH8150/4		HR415		TC40	TVA-1402	
C5	3-9			EF-001	MFT-1000				503C-D1	
C6	.5-3				829-3			CT565A		
C7	120			SH120	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C8	1000			BPD-001	DD-102	TM5D1	80L-001	DC-521	5HK-D1	
C9	100			SH100	D6-101	TM5T5	GP1K-101	UC-531	5GA-T1	
C10	.5-3				829-3			CT565A		
C11	20									
C12	10			SH10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C13	.5-3				829-3			CT565A		
C14A	5000		35T27	BPD-2X005	DD2-502	TM5DD5	81L-005	DC-525	5HK-2D5	
B	5000						81L-005	DC-525		
C15	10			SH10NT50			N750K-100		5TCUB-Q1	
C16	120			SH120	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C17A	5000		35T27	BPD-2X005	DD2-502	TM5DD5	81L-005	DC-525	5HK-2D5	
B	5000						81L-005	DC-525		
C18A	5000		35T27	BPD-2X005	DD2-502	TM5DD5	81L-005	DC-525	5HK-2D5	
B	5000						81L-005	DC-525		
C19A	5000		35T27	BPD-2X005	DD2-502	TM5DD5	81L-005	DC-525	5HK-2D5	
B	5000						81L-005	DC-525		
C20	180		35T31	SH180	D6-181		GP3K-181			
C21A	5000		35T27	BPD-2X005	DD2-502	TM5DD5	81L-005	DC-525	5HK-2D5	
B	5000						81L-005	DC-525		
C22	3.3		35T35							
C23	470		35T32	SH471	D6-471		GP3K-471	UC-5347	5GA-T47	
C24	5000		35T16	BPD-005	DD-502	TM5D1	81L-005	DC-525	5HK-D5	
C25	.25	200	33T15	P288-25		PTE4P25		FT4025	2TM-P25	
C26	100		35T15	SH100	D6-101	TM5T5	GP1K-101	UC-531	5GA-T1	
C27A	5000		35T27	BPD-2X005	DD2-502	TM5DD5	81L-005	DC-525	5HK-2D5	
B	5000						81L-005	DC-525		
C28	10		33T23	SH10	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C29	120		35T24	SH120	TCZ-120				5TCC-7T2	
C30	.05	600	33T6	P688-05	DF-503	PTE685		PT615	6TM-S5	
C31	10		35T23	SH10	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C32	.05	200	33T23	P288-05	DF-503	PTE485		PT415	4TM-S5	
C33	5		35T4	SH5	TCZ-5		NP0K-5	ZT-555		
C34	39		35T14	SH39	TCZ-39				5TCC-Q39	
C35A	5000		35T27	BPD-2X005	DD2-502	TM5DD5	81L-005	DC-525	5HK-2D5	
B	5000						81L-005	DC-525		
C36	5000		35T16	BPD-2X005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C37A	1500		35T30	BPD-2X0015	DD2-152	TM5DD15	801-0015	DC-5215	5HK-2D15	
B	1500						801-0015	DC-5215		
C38	.005	600	33T19	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C39	.02	600	33T12	P688-02	DF-203	PTE6S2		PT612	6TM-S2	
C40	.005	600	33T20	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C41	5000		35T16	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C42	.22	600	33T27	P688-2		PTE6P2		PT602	6TM-P2	
C43	220		35T25	SH220	TCZ-220				5TCC-T22	
C44	.002	600	33T26	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C45A	2000					TM5D3		DC-523		
B	5000		*37T1	*PA-110	*PC-100	TM5D5	*1405-01	DC-525	*101C1	
C	5000					TM5D5		DC-525		
C46	4700	500	35T21	1464-006		IDR5D5		MCB465	MS-25	
C47	.05	600	33T6	P688-05	DF-503	PTE685		PT615	6TM-S5	

CAPACITORS (cont)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C48	.1	600	33T7	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C49	.2	600	33T27	P688-2		PTE6P2		PT602	6TM-P2	
C50	.2	600	33T27	P688-2		PTE6P2		PT602	6TM-P2	
C51	.01	600	33T29	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C52	.01	600	33T29	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C53	.01	200	33T21	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C54	.005	600	33T20	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C55	.005	600	33T19	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C56	.05	200	33T23	P288-05	DF-503	PTE485		PT415	4TM-S5	
C57	3900		35T20	1494-004		IDR5D4		MCB463	MS-24	
C58	330		35T19	1479-0003		5R5T3		MCB241	MS-33	
C59	330		35T19	1479-0003		5R5T3		MCB241	MS-33	
C60	470		35T3	1469-0005		5R5T5		MCB245	MS-35	
C61	.05	600	33T6	P688-05	DF-503	PTE685		PT615	6TM-S5	
C62	.05	600	33T6	P688-05		PTE685		PT615	6TM-S5	
C63	.1	600	33T7	P688-1		PTE6S1		PT601	6TM-P1	
C64	10	2000	33T33	RVD30-00001		TM60Q1			20GA-Q1	
C65	500	20000	35T11	HV20C	TV3-502	MMC-20T5	413-501	HV20035A	20DK-T5	
C66	.01	400	33T29	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C67	.2	600	33T27	P688-2		PTE6P2		PT412	6TM-P2	
C68	56	2000	35T18						20GA-Q56	
C69A	5000		35T27	BPD-2X005	DD2-502	TM5DD5	81L-005	DC-525	5HK-2D5	
B	5000						81L-005	DC-525		
C70	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	Note 1

* Items C45A, C45B, C45C, R64A, R64B, R64C are combined in one unit.
Note 1. Not used in all Models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: MALLORY PART No.	INSTALLATION NOTES
R1A	2000Ω	½	50T10	*QJ-379	RTV-67		UF23L)	Contrast (Panel)
B	1Meg	½	Not Req.				UR18A)†	Volume (Rear)
C	Switch		Not Req.				US-26)	Attach to R1B
R2A	1Meg	½	50T13	Q11-137	AG-61-8	AB-69	U-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R2A
R3A	25KΩ	½	50T16	Q11-120	AG-40-8	AB-26	U-29	Brightness
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R3A
R4A	50KΩ	½	50T14	Q11-123	AG-44-8	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R4A
R5A	4000Ω	½	50T3	Q11-114	AG-80-8	AB-9	SU-14	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R5A
R6A	2.5Meg	½	50T2	Q11-230	AG-84-8	AB-83	SU-565	Height
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R6A

* CONCENTRIKIT EQUIVALENT KIT-K-2 BASE ELEMENTS & SHAFTS B17-110 & P1-123 (panel)
B13-137 & R1-209 (rear) & SWITCH 78-1
† Universal replacement (Mallory exact duplicate part No. US262S).

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R7	3900Ω	½		BTS-3900	
R8	47KΩ	½		BTS-47K	
R9	10KΩ	½		BTS-10K	
R10	2200Ω	½		BTS-2200	
R11	4700Ω	½		BTS-4700	
R12	220KΩ	½		BTS-220K	
R13	10KΩ	½		BTS-10K	
R14	4700Ω	½		BTS-4700	
R15	15KΩ	½		BTS-15K	
R16	4700Ω	1	20T472-32	BTS-4700	
R17	82Ω	1	20T820-32	BTS-82	
R18	100Ω	1	20T101-32	BTS-100	
R19	330Ω	1	20T331-32	BTS-330	
R20	10KΩ	1	20T103-32	BTS-10K	
R21	47Ω	1	20T470-32	BTS-47	
R22	100Ω	1	20T101-32	BTS-100	
R23	330Ω	1	20T331-32	BTS-330	
R24	820KΩ	1	20T824-32	BTS-820K	
R25	22KΩ	1	20T223-32	BTS-22K	
R26	150Ω	1	20T151-32	BTS-150	
R27	33KΩ	1	20T333-32	BTS-33K	
R28	100Ω	1	20T101-32	BTS-100	
R29	100Ω	1	20T101-32	BTS-100	
R30	100Ω	1	20T101-32	BTS-100	
R31	220KΩ	1	20T224-32	BTS-220K	
R32	100Ω	1	20T101-32	BTS-100	
R33	2750Ω	10	20T10		
R34	4700Ω	½	20T472-32	BTS-4700	
R35	3300Ω	1	20T332-42	BTA-3300	
R36	1Meg	½	20T105-33	BTS-1Meg	
R37	33KΩ	½		BTS-33K	
R38	1800Ω	1	20T182-42	BTA-1800	
R39	3300Ω	2	20T332-52	BTB-3300	
R40	3300Ω	2	20T332-52	BTB-3300	
R41	100K	1	20T104-42	BTA-100K	
R42	1500Ω	1	20T152-42	BTA-1500	
R43	330KΩ	1	20T334-32	BTS-330K	
R44	3900Ω	½	20T392-32	BTS-3900	
R45	12KΩ	½		BTS-12K	Note 2
R46	47KΩ	½	20T473-33	BTS-47K	
R47	100Ω	½	20T101-33	BTS-100	
R48	47KΩ	½	20T473-32	BTS-47K	
R49	47KΩ	½	20T473-42	BTA-47K	
R50	1000Ω	½	20T102-32	BTS-1000	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R51	15KΩ	½	20T153-32	BTS-15K	
R52	33KΩ	½	20T333-32	BTS-33K	
R53	6.8Meg	½	20T685-32	BTS-6.8Meg	
R54	470KΩ	½	20T474-32	BTS-470K	
R55	470KΩ	½	20T474-32	BTS-470K	
R56	560Ω	1	20T561-42	BTA-560	
R57	470Ω	1		BTA-470	
R58	56KΩ	½	20T563-32	BTS-56K	
R59	220KΩ	½	20T224-32	BTS-220K	
R60	1.5Meg	½	20T155-32	BTS-1.5Meg	
R61	2700Ω	½	20T272-32	BTS-2700	
R62	3900Ω	½	20T392-32	BTS-3900	
R63	3900Ω	½	20T392-32	BTS-3900	
R64A	22KΩ	½		BTS-22K	
B	8200Ω	½	* 37T1	BTS-8200	
C	8200Ω	½		BTS-8200	
R65	1.5Meg	½	20T155-32	BTS-1.5Meg	
R66	8200Ω 5%	½		BTS-8200 5%	
R67	470KΩ	½	20T474-32	BTS-470K	
R68	6.8Meg	½	20T685-32	BTS-6.8 Meg	
R69	220Ω	½	20T221-32	BTS-220	
R70	47KΩ	1	20T473-42	BTA-47K	
R71	180KΩ	1	20T184-32	BTS-180K	
R72	10KΩ	1	20T103-32	BTS-10K	
R73	100KΩ	1	20T104-32	BTS-100K	
R74	100KΩ	1	20T104-32	BTS-100K	
R75	100KΩ	1	20T104-32	BTS-100K	
R76	390Ω	1	20T391-32	BTS-390	
R77	3.3Meg	½	20T335-32	BTS-3.3Meg	
R78	470KΩ	½	20T474-32	BTS-470K	
R79	1800Ω	1	20T182-32	BTS-1800	
R80	3900Ω	½	20T392-32	BTS-3900	
R81	2200Ω	½	20T222-32	BTS-2200	
R82	180KΩ	½	20T184-32	BTS-180K	
R83	180KΩ	½	20T184-32	BTS-180K	
R84	100Ω	1	20T101-32	BTS-100	
R85	470KΩ	½	20T474-32	BTS-470K	
R86	12KΩ	½	20T123-52	BTB-12K	
R87	3.3Ω	½	20T3		
R88	470KΩ	1	20T474-42	BTA-470K	
R89	560Ω	1		BTS-560	
R90	560Ω	½		BTS-560	
R91	100Ω	10	20T10	1 5/4A-100	Note 1

Note 1. Not used in all models.
Note 2. Some models may use a 8200Ω resistor in this application.
* Items R64A, R64B, R64C, C45A, C45B, C45C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.	REPLACEMENT DATA: RCA TYPE No
T1	117VAC @1.46A	552VCT .240ADC	5VAC @3A	6.3VAC @1.78A SEC.4 6.3VCT @6.6A	90T4C		P-3070①			

① Do not use low voltage taps on HV secondary.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.	REPLACEMENT DATA: RCA TYPE No.	NOTES
T2	150Ω	1300Ω	91T6	A-8125	A-3005	TBO-5	A-97X	209T1⑧	Vert.Osc. Trans. Horiz.Output Trans.
T3	402Ωtap ④27Ω	16Ω tap ⑤ .5Ω, 8.5Ω SEC. 3 0Ω	91T5B 91T5A ①		HVO-10 ② ③	TFB-14 ② ④	D-33 ⑤		
T4	840Ω	9Ω	91T3	A-8112 ⑥	A-3038	TSO-8 ⑦	A-99X		Vert.Output Trans.
T5A	10Ω		66T4	DY-8A ⑧ 8 ⑭	MDY-70 ⑧ ⑦ ⑭	Y-21 ⑨ ⑭	Y-2106 ⑨ ⑭	206D1 ⑧ ⑭	Horiz.Deflection Coils
B	50Ω		63T24 ⑦						Vert. Deflection Coils
T6	34Ω		63T22	WC-5 ⑫ ⑬	MWC-1 ⑫ ⑬	TL-1	WC-12 ⑬	20R3	Horiz.Lin.Coil
T7	1.5Ω		63T20	WC-4 ⑬	MWC-2 ⑫	TW-2	WC-12 ⑬	20R4	Width Coil

① Alternate horizontal output trans.
② Drill new mounting holes.
③ Connect as in original circuit except, connect original terminal #7 to new terminal #1, original #1 to new #8.
④ Connect original terminal #2 to new terminal #2, original #7 to new #1, original #4 to new #7, original #5 to new #4, original #1 to new #5, original #6 to new #6.
⑤ See instruction sheet packed with unit for terminal connections.
⑥ Drill one new mounting hole.
⑦ Yoke cover and positioning device
⑧ Use original yoke plug and leads. Connect as in original circuit.
⑨ Use original horizontal deflection coil network if necessary.
⑩ Use original yoke cover and positioning device
⑪ Use original deflection coil network
⑫ Enlarge mounting hole.
⑬ Connect to coded red and blue terminals.
⑭ Connect to coded red and green terminals.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.	NOTES
T8	5KΩ	3.2Ω	660Ω	1.1Ω	Part of Spkr	A-3877①	A-3026	RO-9 ①	S-3X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	5"	PM	3.2Ω	55T3	ST-105 Mod. P5-X	5A1	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: MEISSNER PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: MILLER PART No.	NOTES
L1	Ant. Coils	0ΩCT	0Ω					
L2	FL. Choke	0Ω						
L3	RF, Mixer grid & Osc. Coils	0Ω						
L4	FIL. Choke	0Ω						
L5	1st Video IF	.9Ω		63T1	19-3001	TV-189	6175	.8 Microhenry
L6	FL. Choke	0Ω						
L7	2nd Video IF	.3Ω	.8Ω	63T3	19-1062	TV-116	6250	
L8	FIL. Choke	0Ω		63T1	19-3001	TV-189	6175	.8 Microhenry
L9	3rd Video IF	.6Ω	1Ω	63T5	17-1063	TV-116	6249	
L10	FL. Choke	0Ω		63T1	19-3001	TV-189	6175	.8 Microhenry
L11	4th Video IF	.8Ω	.6Ω	63T4	17-1062	TV-116	6250	
L12	Series Peak. Coil	4.8Ω		63T14	19-4120	TV-122 *	6153	120 Microhenries; wound on 12KΩ resistor
L13	Shunt. Peak. Coil	5.6Ω		63T16	19-3160	TV-184	6044	160 Microhenries
L14	Series Peak. Coil	7.5Ω		63T13	19-4121	TV-122 ▲	6153	120 Microhenries; wound on 8.2KΩ resistor
L15	Series Peak. Coil	7.8Ω		63T13	19-4121	TV-122 ▲	6153 ■	120 Microhenries; wound on 8.2KΩ resistor
L16	Shunt Peak. Coil	TO		63T15	19-3125		6153	120 Microhenries Tapped ④ .5Ω
L17	Sound IF	2.6Ω		63T12	17-3402			Tertiary windings. 8Ω
L18	Ratio Det.	5.5Ω	1.8ΩCT	63T23	17-3497	TV-115	6205	
L19	Horiz. Osc.	80Ω		60T1	19-1576	TV-163	6310	

* Parallel with 27K resistor.
† Parallel with 12KΩ resistor.
▲ Parallel with 13KΩ resistor.
■ Parallel with 8.2KΩ resistor.

TRUETONE
MODELS 2D2301A, 2D2302A

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L20	.240ADC	61Ω	2Hy	63T18		C-2991 ①	TR-1733	C-17X

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			TRUETONE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3A	42T24	11T46	312003 (3AG-3A)	341001	AGC3	HKP
M2	3AG	1/4A	42T28		312.250 (3AG-1/4A)	(2) 121001 clips	AGC 1/4	(2) 4592 Clips

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M3	Tuner	56T4	VHF 12 Channel
M4	Centering Magnet	63T24	
M5	Ion Trap	63T11	
B2	Trimmer Cap.	36T2	Horiz. Drive (25-280MMF)
	Cabinet	120T5	Model 2D2301
	Cabinet	120T9	Model 2D2302
	Back Cover	125T2	Model 2D2301
	Back Cover	125T3	Model 2D2302
	Knob	122T10	Channel Selector
	Knob	122T11	Fine tuning
	Knob	122T12	Off/on/volume
	Knob	122T13	Contrast
	Safety Glass	130T6	Model 2D2301
	Safety Glass	130T10	Model 2D2302
	Control Door	10T34	

TROUBLE SHOOTING AIDS (cont)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

POWER

DEAD SET

If filaments fail to light, check fuse M1, AC interlock assembly, switch on volume control and T1. If filaments light, substitute V20. Check B+ filter and decoupling network components.

SMALL AND/OR DIM PIX

Substitute V20. Check B+ filter and decoupling network components.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check fuse M2. Check by substitution V16, V17, V18 and V19. Check waveform W15.

If Satisfactory	If Unsatisfactory
Check R88, R87, C65, T3, T5A and other associated components.	Check R82, R85, C58, C59, C60 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V16, V17, V18, V19 and V20. Check picture tube and associated components. Follow procedure outlined under "Loss Of High Voltage".

BLOOMING

Check by substitution V16, V17, V18, V19 and V20. Check R87, C65, T3, T5A and other associated components.

GENERAL

RASTER SOUND NO PIX

Follow procedure outlined under "Loss Of Video".

RASTER NO SOUND NO PIX

Check by substitution V1, V2, V3, V4, V5, V6 and V7. Check associated components.

NO RASTER NO SOUND

Follow procedure outlined under "Dead Set".

INTERMITTENT STREAKS

Check signal at W1 for interference pulses. Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removing the Channel Selector and Fine Tuning knobs.

PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety Glass cleaning, it is necessary to remove chassis. (See disassembly instructions.)

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions.)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the Horiz. Oscillator Circuit can be made from the rear panel of the chassis. Set the Horiz. Hold Control at the Mid-position of its range and adjust the Horiz. AFC Slug L19 until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

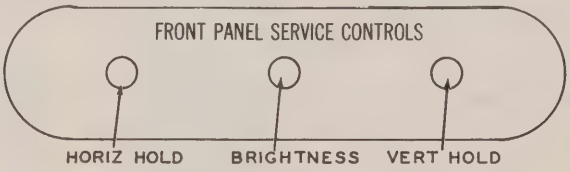
To eliminate Sound IF Detector Buzz, adjust the Ratio Detector Secondary L18 located on top of chassis. (See tube placement chart.

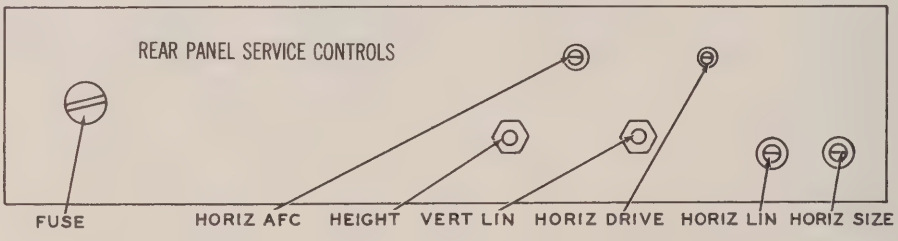
FUSES

Two fuses are used. One for Horiz. Sweep Circuit protection and one for L. V. Power Supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.





DISASSEMBLY INSTRUCTIONS

Remove 4 push on type control knobs from front panel.

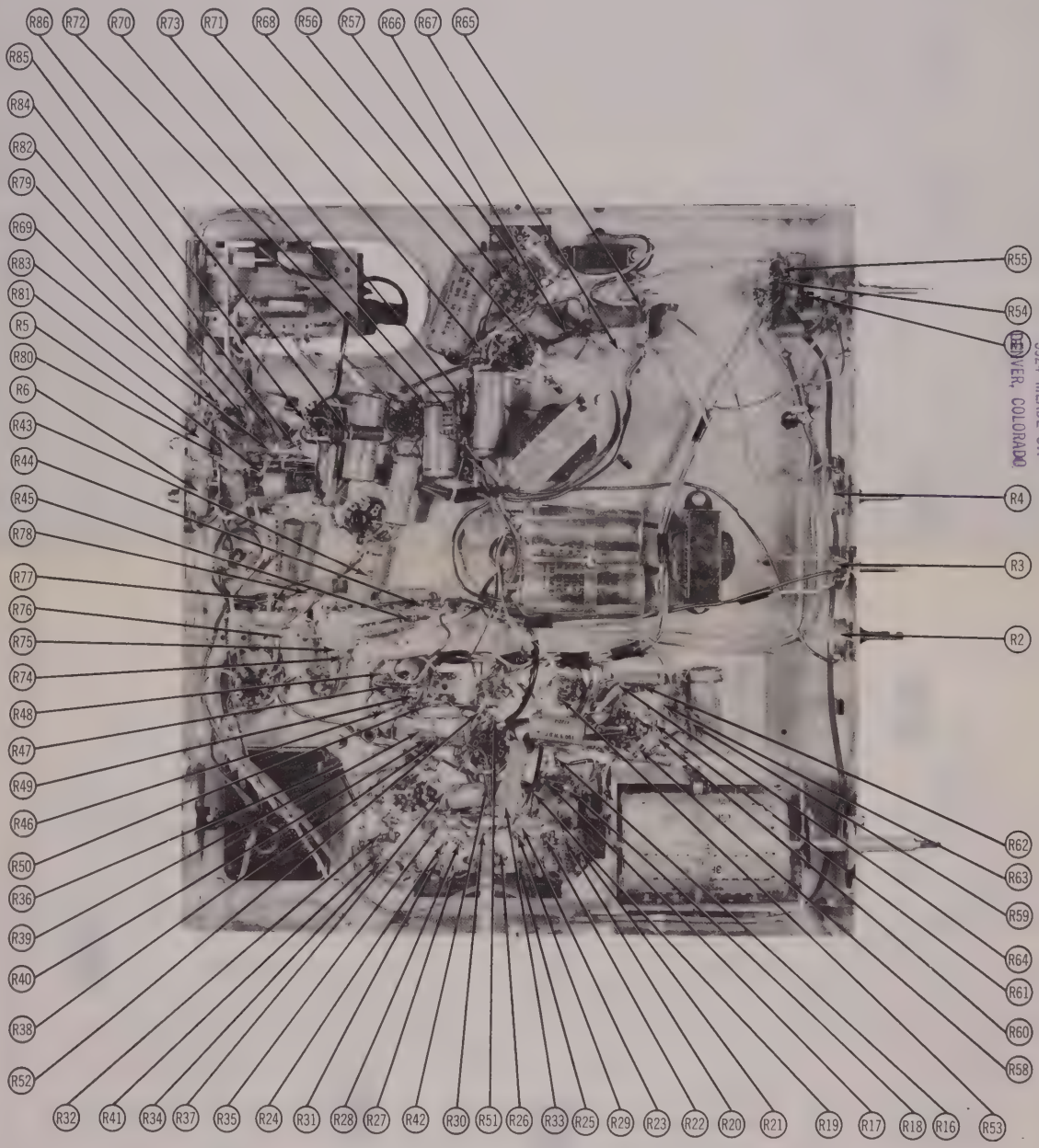
Disconnect built-in antenna and transmission line from cabinet.

Remove 7 wood 1 metal screws. Remove rear cover.

Disconnect speaker.

Remove 6 chassis bolts remove chassis.

Remove 2 speaker nuts. Remove speaker.

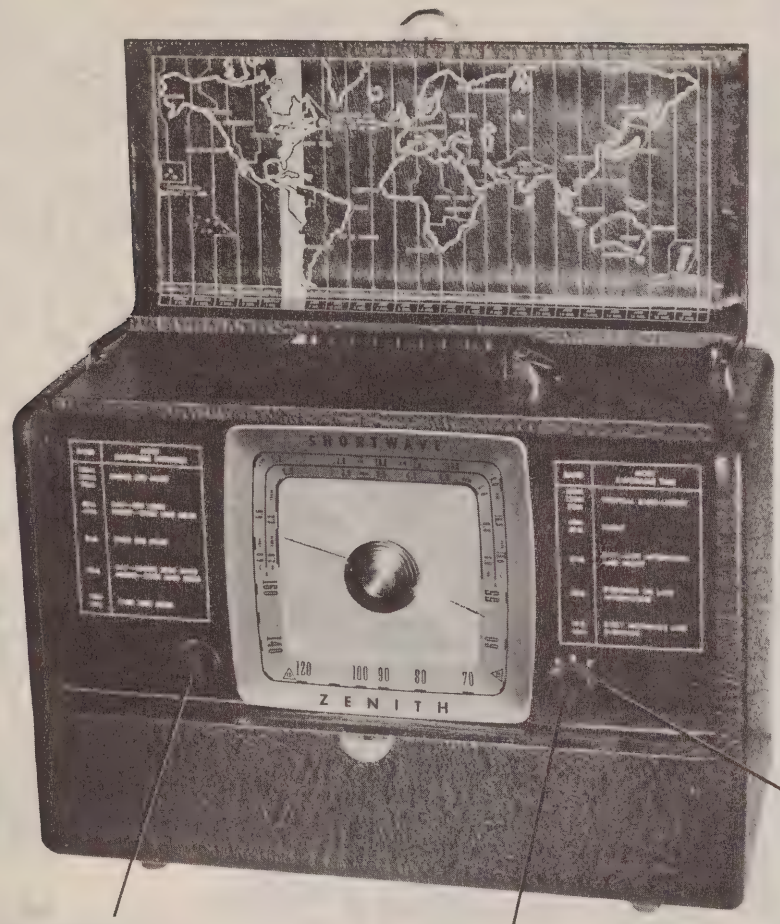


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PROPERTY OF
L. E. MARKSHIP
3924 MEADE ST.
DENVER, COLORADO

PROPERTY OF
L. F. BLANKENSHIP
3024 MEADE ST.
DENVER, COLORADO

ZENITH
MODEL L507 (Ch. 5L42)



TUNING CONTROL

ON-OFF SWITCH
VOLUME CONTROL

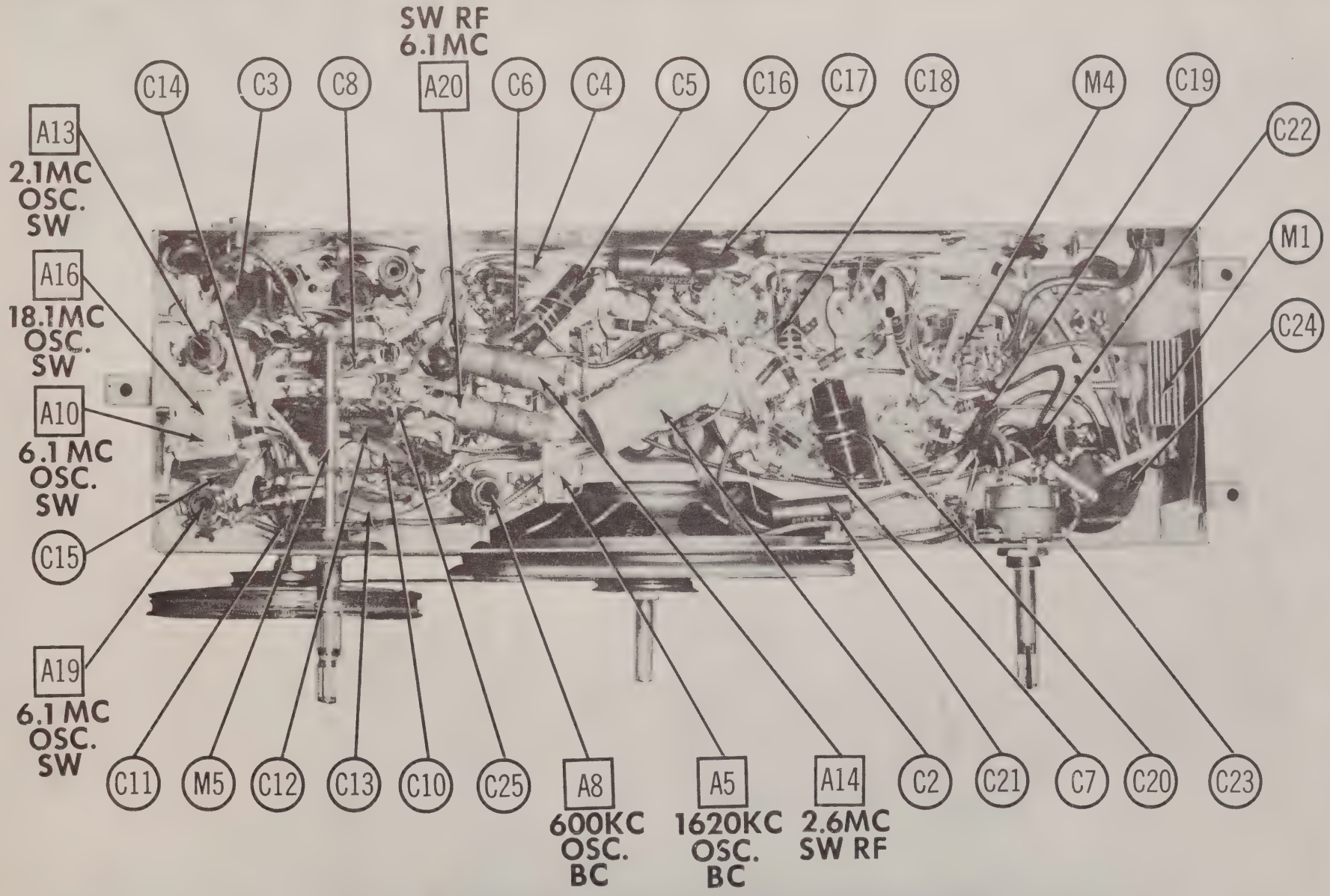
BAND SWITCH

ZENITH
MODEL L507 (Ch. 5L42)

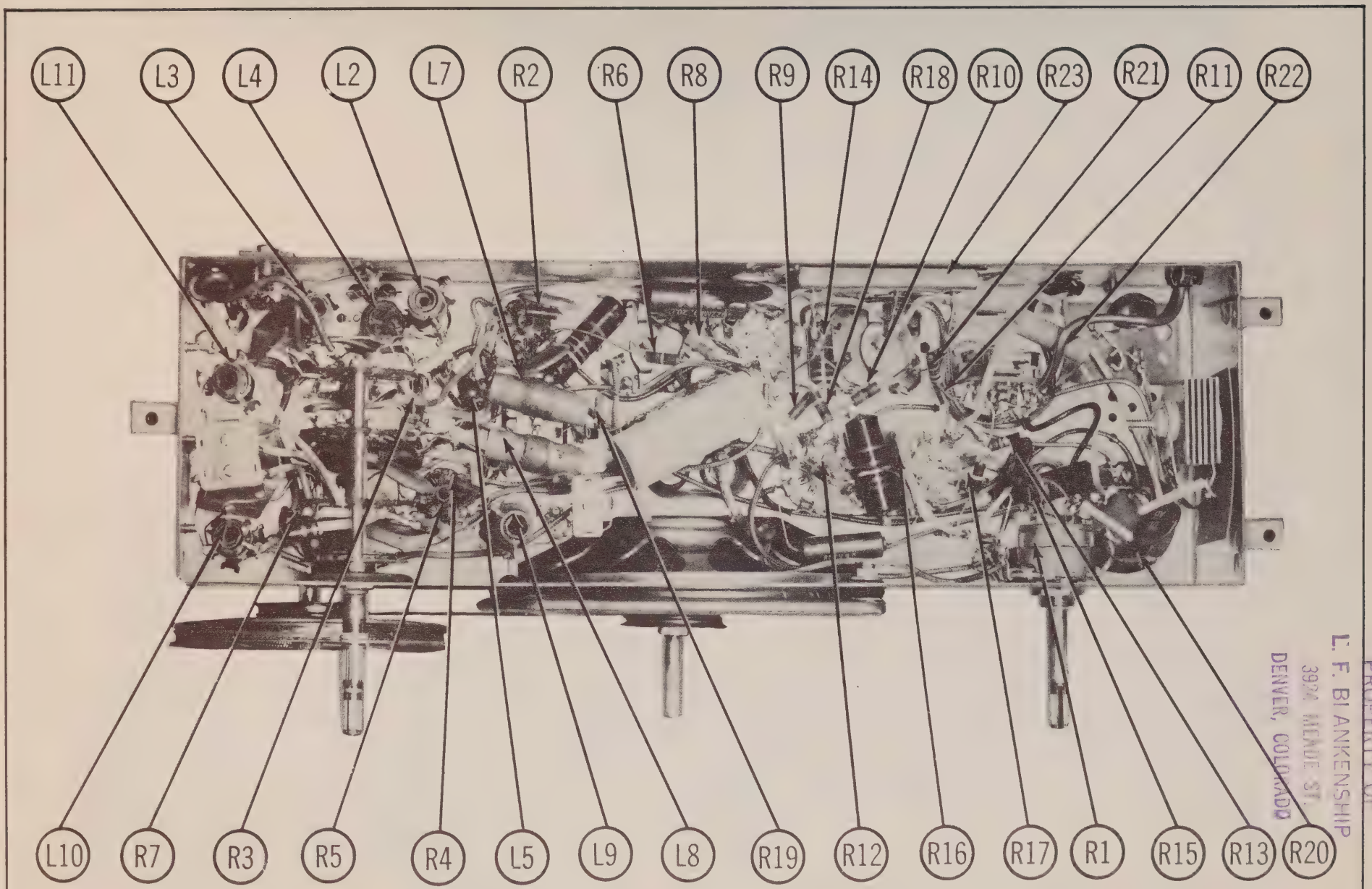
TRADE NAME	Zenith Model L507 (Ch. 5L42)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.
TYPE SET	Three Power Portable 3 Band Superheterodyne Receiver
TUBES (Five)	Types 1U4 RF Amp., 1L6 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY	110-120 Volts AC-DC (220 Volts with Adaptor) (or) 9 Volts "A" Supply & 90 Volts "B" Supply in Pack form
RATING	.12 Amp. @ 117 Volts AC (or) 50MA @ 9 Volts DC & 16MA @ 90Volts DC
TUNING RANGE - BROADCAST	540-1600KC SHORT WAVE "B" Band (2-6MC) "C" Band (6-18MC)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1954 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

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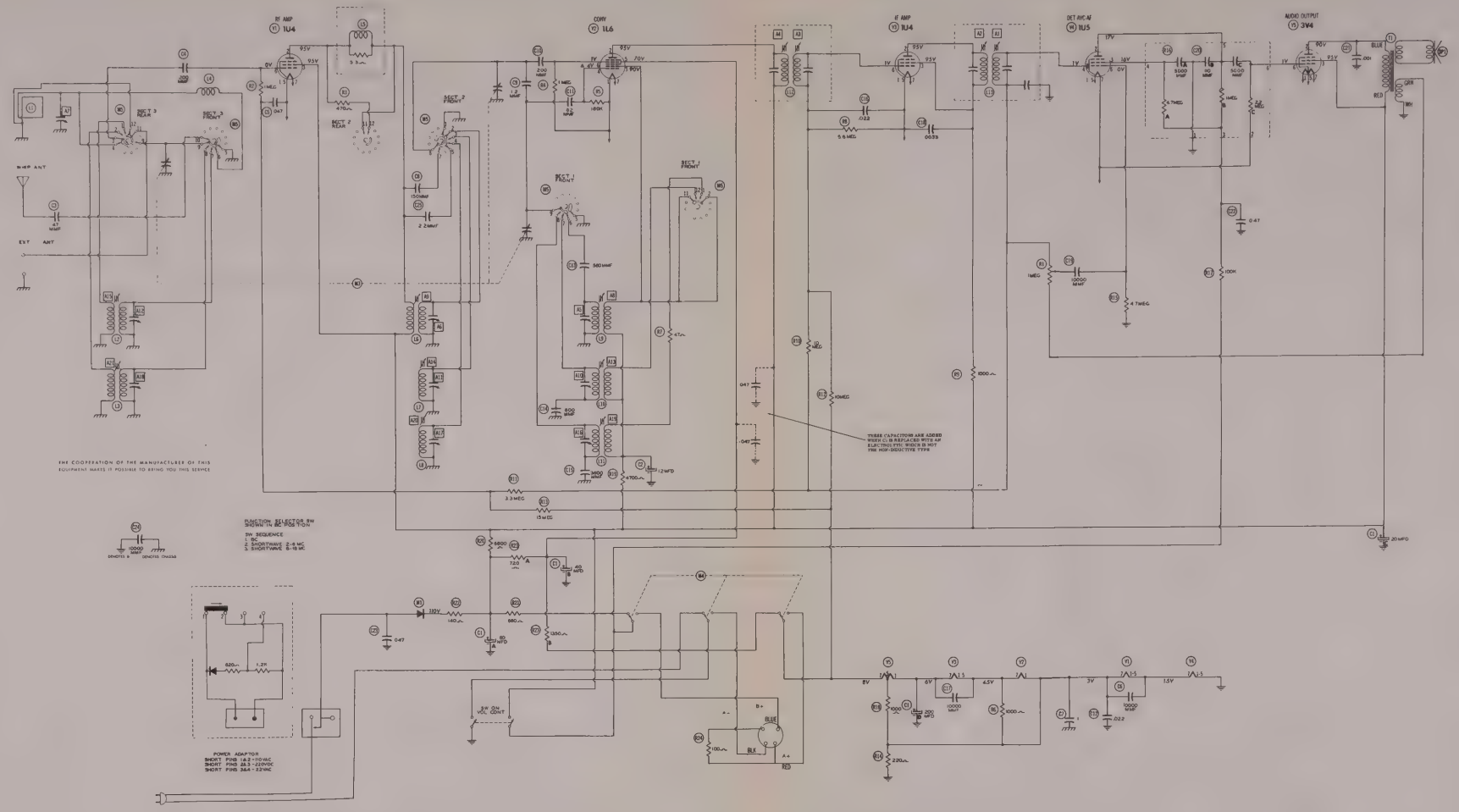
DENVER, COLORADO



1- DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2- S socket connections are shown as bottom views.
3- Measured values are from socket pin to common negative.
4- Line voltage maintained at 117 volts for voltage readings.
5- Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6- Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	*	†820Ω	†820Ω	3.1Meg	*	3.9Meg	*
V 2	1L6	*	†820Ω	†5KΩ	300KΩ	†860Ω	1Meg	*
V 3	1U4	*	†1.6KΩ	†1.6KΩ	25Ω	*	2.3Meg	*
V 4	1U5	*	†1.1Meg	†4.8KΩ	1Meg	2Meg	4.7Meg	*
V 5	3V4	*	†1.7KΩ	†820Ω	2.3Meg	*	1.9Meg	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
† MEASURED FROM OUTPUT OF M1
▲ TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Zenith tuning wrench 68-19 or equivalent should be used when aligning IF transformers. With tuning gang fully closed set pointer parallel with base of chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.47MFD	High side to pin 6 (grid) of 1L6 (V2). Low side to B-.	455KC (400%Mod)	"A"	Tuning gang fully closed	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200 MMF to reduce hum modulation.
2.	"	High side to pin 6 (grid) of 1U4 (V1). Low side to B-.	1620KC	"	Tuning gang fully open	"	A5	"
3.	"	"	1400KC	"	Tune to 1400KC signal	"	A6, A7	"
4.	"	"	600KC	"	Tune to 600KC signal	"	A8	Adjust for maximum deflection while rocking tuning gang thru 600KC signal.
5.	"	"	600KC	"	"	"	A9	A9 is preset at the factory and should not require adjustment, however it may be peaked at 600KC if necessary.
6.	Repeat steps 2, 3, and 4.							

RF ALIGNMENT (Band "B")

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
7.	20MMF	High side to "wave rod" antenna lug socket. Low side to chassis.	6.1MC	"B"	Tuning gang fully open	Across voice coil	A10	Adjust for maximum deflection.
8.	"	"	5.5MC	"	Tune to 5.5MC signal	"	A11, A12	Adjust for maximum deflection in order given while rocking tuning gang thru 5.5MC signal.
9.	"	"	2.1MC	"	Tune to 2.1MC signal	"	A13	Adjust for maximum deflection while rocking tuning gang thru 2.1MC signal.
10.	Repeat steps 7, 8 and 9.							
11.	20MMF	High side to "wave rod" antenna lug socket. Low side to chassis.	2.1MC	"	Tune to 2.1MC signal	"	A14, A15	A14 and A15 are preset at the factory and should not require adjustment, however, they may be peaked at 2.1MC if necessary.

RF ALIGNMENT (Band "C")

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
12.	20MMF	High side to "wave rod" antenna lug socket. Low side to chassis.	18.1MC	"C"	Tuning gang fully open	Across voice coil	A16	Adjust for maximum deflection.
13.	"	"	16MC	"	Tune to 16MC signal	"	A17, A18	Adjust for maximum deflection in order given while rocking tuning gang through 16MC signal.
14.	"	"	6.1MC	"	Tune to 6.1MC signal	"	A19	Adjust for maximum deflection while rocking tuning gang thru 6.1MC signal.
15.	Repeat steps 12, 13 and 14.							
16.	20MMF	High side to "wave rod" antenna lug socket. Low side to chassis.	6.1MC	"	Tune to 6.1 MC signal	"	A20, A21	A20 and A21 are preset at the factory and should not require adjustment, however, they may be peaked at 6.1MC, if necessary.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		ZENITH PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	1U4	1U4	6AR	
V2	Converter	1L6	1L6	7DC	
V3	IF Amplifier	1U4	1U4	6AR	
V4	Det-AVC-AF-Amp.	1U5	1U5	6BW	
V5	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

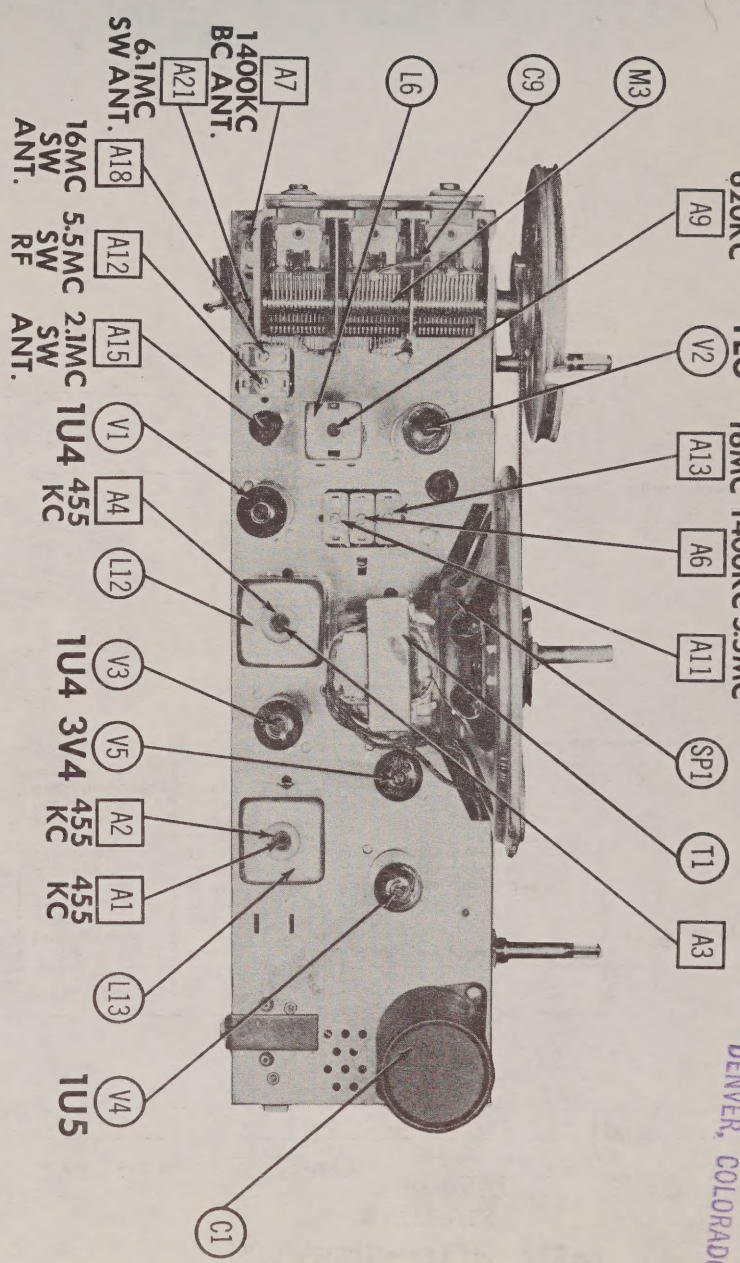
ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲60	150	22-2410	AFH4-23		DO30		FP408	R1079	
B	■40	150								
C	▲20	150								
D	200	10								
C2	12	150	22-2056	PRS150/12		BR1215		TC43	TVA-1407	
C3	47	500	22-1662	1468-00005	D6-470	5W5Q5	GP1K-470	MC225	MS-45	
C4	200		22-2472		TCN-200				5TCU-T2	
C5	.047	200	22-1778	P488-047		PTE4S47		PT4147	4TM-S47	
C6	10000		22-3	BPD-01	DD-1032	TM5S1	GP2-333-103	DC-511	5HK-S1	
C7	.1	200	22-1777	P288-1	DF-104	PTE4P1		PT401	2TM-P1	
C8	150		22-2471		TCN-150				5TCU-T15	
C9	1.2		22-1765							
C10	200		22-2472		TCN-200				5TCU-T2	
C11	82	500	22-2485		D6-820		GP1K-820			
C12	.022	200	22-2071	P488-022	DD-203	PTE4S22		PT4122	4TM-S22	
C13	560	500	22-1949		D6-561		GP2K-561			
C14	800	500	22-2488	1464-0008		IW5T8		MC251	MS-38	
C15	3600	500	22-2062							
C16	.022	200	22-2071	P488-022	DD-203	PTE4S22		PT4122	4TM-S22	
C17	10000		22-3	BPD-01	DD-1032	TM5S1	GP2-333-103	DC-511	5HK-S1	
C18	.0033	200	22-2157	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233		
C19	10000		22-3	BPD-01	DD-1032	TM5S1	GP2-333-103	DC-511	5HK-S1	
C20A	5000									
B	110		*105-31	*PA-117	*PC-91		*1407-03		*103C3	
C	5000									
C21	.001	500	22-2127	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C22	.047	200	22-1778	P488-047		PJ4S5		PT4147	4TM-S47	
C23	.047	200	22-1778	P488-047		PJ4S5		PT4147	4TM-S47	
C24	10000		22-3	BPD-01	DD-1032	TM5S1	GP2-333-103	DC-511	5HK-S1	
C25	2.2		22-1763		TCZ-2.2				5TCCB-V22	

* Items C20A, C20B, C20C and R16A, R16B, R16C are combined in one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	63-2852	Q11-137	AG-61-S	AB-69	U-54	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWB-2	US-27	US-27	Attach to R1A

CHASSIS—TOP VIEW



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R2	1Meg	½	63-1912	BTS-1Meg	
R3	470Ω	½	63-1771	BTS-470	
R4	1Meg	½	63-1912	BTS-1Meg	
R5	180KΩ	½	63-1880	BTS-180K	
R6	1000Ω	½	63-1785	BTS-1000	
R7	47Ω	½	63-1729		
R8	5.6Meg	½	63-1943	BTS-5.6Meg	
R9	1000Ω	½	63-1786	BTS-1000	
R10	10Meg	½	63-1954	BTS-10Meg	
R11	3.3Meg	½	63-1933	BTS-3.3Meg	
R12	10Meg	½	63-1954	BTS-10Meg	
R13	15Meg	½	63-1960	BTS-15Meg	
R14	220Ω	½	63-1757	BTS-220	
R15	4.7Meg	½	63-1940	BTS-4.7Meg	
R16A	4.7Meg	½		BTS-4.7Meg	
B	1Meg	½	* 105-31	BTS-1Meg	
C	2.2Meg	½		BTS-2.2Meg	
R17	100KΩ	½	63-1870	BTS-100K	
R18	1000Ω	½	63-1785	BTS-1000	
R19	4700Ω	½	63-1814	BTS-4700	
R20	6800Ω	½	63-1821	BTS-6800	
R21	680Ω	½	63-1778	BTS-680	
R22	140Ω	4	63-2014		
R23A	720Ω	10	63-2010		
B	1350Ω				
R24	100Ω	½	63-1744	BTS-100	

Items R16A, R16B, R16C, C20A, C20B, C20C are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	10KΩ	3.2Ω	900Ω	.42Ω Sec #2 .8Ω	95-1345					

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA ZENITH PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	5 1/4"	PM	3.2Ω	49-734	ST-803 Mod. P525-V	52A1	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	BC Loop Ant.	0Ω	.5Ω	S-20054				
L2	SW Ant. Coil	.3Ω	1.6Ω	S-19987				2-6MC
L3	SW Ant. Coil	.2Ω	.1Ω	S-19988				6-18MC
L4	Ant. Loading Coil	1.6Ω		S-16047	19-3036	TV-180	4628	45 Microhenries
L5	RF Choke	6Ω		S-20076				Wound on resistor
L6	BC RF Coil	110Ω	4.6Ω	S-19981				
L7	SW RF Coil	.6Ω		S-19989				2-6MC
L8	SW RF Coil	0Ω		S-19990				6-18MC
L9	BC Osc. Coil	3.2Ω	5.5Ω	S-19993		BC-381 *	71-Osc.	
L10	SW Osc. Coil	.6Ω	.4Ω	S-19991				2-6MC
L11	SW Osc. Coil	.5Ω	0Ω	S-19992				6-18MC
L12	Input IF	26Ω	26Ω	95-1349	16-6666	BC-368	1312-C1	
L13	Output IF	26Ω	26Ω	95-1350	16-6770 †	BC-355 †	12-C6 †	

* Disregard tap on secondary winding.
† Use adaptor plate and cut out center spade bolt mounting support.

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA ZENITH PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	NOTES
M1	.066A	212-5	5M4	1003A	6S75	75	

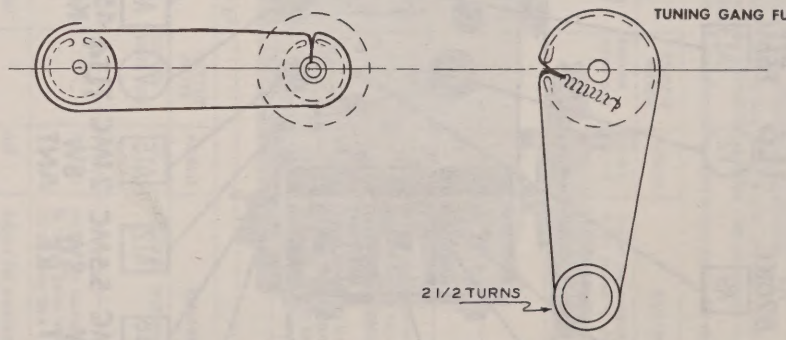
CHASSIS—TOP VIEW

BATTERIES

ITEM No.	VOLTAGE	ZENITH PART No.	REPLACEMENT DATA EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M2	9V-A 90V-B				757			F6A60P	

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Tuning capacitor	22-2476	3 section each 10-447MMF
M4	Switch, power select	85-520	
M5	Switch, band	85-528	Function selector
A5	Trimmer cap	22-2473	Single section with bracket
A10, A16	Trimmer cap	22-2474	Dual section with bracket
	Trimmer cap	22-2475	Single section (6 used)
	Cabinet	14-1563	
	Dial scale	26-501	
	Knob, truning	46-1172	
	Knob, band switch	46-1173	
	Knob, volume off-on	S-22052	



DIAL CORD STRINGING